

**State of New Jersey
Christine Todd Whitman, Governor**

**AMBIENT BIOMONITORING NETWORK
Watershed Management Areas 1, 2, and 11
Upper Delaware Region
1998 Benthic Macroinvertebrate Data**



**New Jersey Department of Environmental Protection
Robert C. Shinn, JR., Commissioner**

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NJ Department of Environmental Protection
Environmental Planning & Science
Bob Tudor, Assistant Commissioner
Division of Watershed Management
Lance Miller, Director
Water Monitoring Management
James E. Mumman, Administrator
Bureau of Freshwater & Biological Monitoring
Alfred L. Korndoerfer, Jr., Chief

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Water Monitoring Report Prepared By:
Bureau of Freshwater and Biological Monitoring

John Kurtz, Project Manager
Victor Poretti
Thomas Miller
Dean Bryson

Map Preparation:

John Sell

Edited By:

Alfred L. Korndoerfer, Jr.
Paul Olsen



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INTRODUCTION

Historical Perspective

Since the early 1970s the New Jersey Department of Environmental Protection (NJDEP) has conducted biological monitoring of the state's water bodies. These biomonitoring studies, currently conducted by the Bureau of Freshwater and Biological Monitoring (BFWM), have included both long-term ambient monitoring and short-term intensive surveys. The information gathered contributes significantly to State water quality management and pollution mitigation efforts. The United States Environmental Protection Agency (USEPA) has recognized that a thorough program of monitoring aquatic biota can be a cost-efficient means of gauging the quality of water and watershed areas [1, 2]. Because flora and fauna of various trophic levels can integrate the effects of water quality or habitat changes over time, they become very effective pollution indicators. For lotic (running water) systems, analysis of benthic macroinvertebrate communities provides the principal means of achieving this, particularly since macroinvertebrates are more stationary than fish, and less temporal than periphytic, or attached microscopic communities.

New Jersey's initial long-term ambient biological stream monitoring program, in the mid 1970s, included only a limited number (31) of "fixed stations," many of which proved later to be either inaccessible or in degraded condition. In 1991, however, the BFWM received numerous requests from the Office of Regulatory Policy to reinitiate or upgrade long-term monitoring of benthic macroinvertebrate communities; the data obtained would be most beneficial in the generation of the 305b (Water Quality Inventory) biennial report [3], in the updating the 303d List (of water quality limited stream segments). Thus, the present Ambient Biomonitoring Network (AMNET) program was developed to provide NJDEP with the greater resolution of baseline data now necessary to support sound policy decisions in water quality/watershed management, and to direct regulatory, or "permit," activities. Initiated in 1992, AMNET samples over 800 stream sites statewide, with approximately 200 sites in each of five major drainage basins (upper and lower Delaware, greater Passaic, Raritan and Atlantic) once every five years. This ambitious project is facilitated by the use of Rapid Bioassessment Protocol II (RBPII) methods, devised by the USEPA, which provide an expedient tool for site ranking, screening and trend monitoring [2]. The present report, on the upper Delaware River basin, marks the start of the second round of AMNET.

Rationale for Biological Monitoring

Biological monitoring, as referenced in this report, pertains to the collection and analysis of stream macroinvertebrate communities as indicators of water or habitat quality. Macroinvertebrates are larger-than-microscopic, primarily benthic (bottom-dwelling) fauna, which are generally ubiquitous in freshwater and estuarine environments, and play an integral role in the aquatic food web. Insects (largely immature forms) are especially characteristic of freshwaters; other major groups include worms, mollusks (snails, clams) and crustaceans (scuds, shrimp, water fleas, etc.). They are more readily collected and quantified than either fish or periphyton communities. Species comprising the in-stream community occupy various niches, based on functional adaptation or feeding mode (e.g. predators, filter or detritus feeders, scavengers); their presence and relative abundance is governed by environmental conditions (which may determine available food supply), and by pollution tolerance levels of the respective species. The overall community thus is holistically reflective of conditions in its environment. Assessments of ambient water and habitat quality can then be made based upon standardized procedures, which can show perturbations measured as changes or differences in community structure [2, 4].

STUDY DESIGN

Data Quality Objectives

The major goal of AMNET is to establish a network of stream sites that would adequately represent New Jersey's major drainage basins and NJDEP's Watershed Management Areas (WMA). Twenty WMAs have recently been delineated within New Jersey's five basins. Each basin constitutes a "Water Region." Within each WMA are several sub-basins, delineated by the United States Geological Survey (USGS) as "hydrologic units," scale 11 (HUC11). The study area of the present report includes WMAs 1, 2, and 11 (see Maps 1 – 7). The sampling frequency reflects a realistic temporal lag between cessation of an environmental perturbation and recovery of the impacted biological community. The 305b Water Quality Inventory [3], which reexamines changes in New Jersey's stream systems on a two-year cycle, has indicated that five years is an optimum period for long-term biomonitoring. An ample network of stations is required for the creation of a long-term database, which in turn, is necessary for trend analysis and operation of water quality predictive models.

Another program goal is to monitor a complete basin's complement of stations within a fiscal year (beginning July 1), giving our modelers and planners a snapshot of ambient biological impacts during that particular year. Monitoring will be rotated to a different basin each new fiscal year.

The spatial distribution of stations is adequate to provide biological impact data on a long-term, basin-wide or statewide scale. It is likely not sufficient, however, to assess the biological impact(s) of any one point source of pollution, as this would be better served by a site-specific or intensive survey of the stream segment in question.

Biological monitoring cannot replace chemical monitoring, toxicity testing, and other standard environmental measurements. Each of these tools provides the analyst with specific information available only through its respective methodology.

Site Selection

For the first round of AMNET, a total of 192 stations had been established in the upper Delaware basin from 1992–1993 [5]. This area (shown in Figure 1) included all sub-basins that drain to the Delaware River from its upper tidal portion at Cooper River (Camden County) northward to Clove Brook near the New Jersey/New York border (Sussex County). On the smallest tributaries, sampling sites were located as closely as to headwaters as practical. To ensure enough flow for sampling, sites on "first-order" streams were situated at least three miles downstream of headwaters (first order streams are those with no tributaries). Since most streams at this level have very little, or only intermittent, flow, most of our sites were situated on second-order streams (with only first-order streams as tributaries) and higher (with a greater hierarchy of tributaries). All sites were located in reasonably accessible and primarily wadable segments, proceeding downstream to just above the confluence with the Delaware River. The Delaware River main stem was not monitored, since this was presumably being done by the Delaware River Basin Commission (DRBC).

For the second round of AMNET (FY98), the original study area was divided into two segments in conformance with the boundary between the newly established Water Regions. The lower portion (WMA #19 & 20), which drains to the upper tidal Delaware River, was deleted from the present study, and the results of that study are to be included as a separate supplemental report. In the Upper Delaware Region (WMA #1 & 11), seven new sites were added and one site was relocated for better access; also, the Wallkill River drainage basin (WMA 2) and its 16 AMNET sites, plus one new site, were included (Figure 2). During the initial AMNET survey in 1993, the Wallkill sub-basin had been included with the greater Passaic, or northeast basin [6]. These additions brought the total number of sampling sites in the Upper Delaware Region to 142, although three of these (AN013, 023, 034) were not sampled due to low flow conditions.

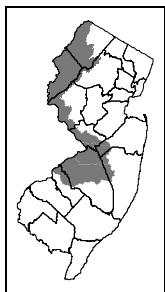


Figure 1

Map of 1992 – '93 study area

To maximize data correlation, AMNET, wherever possible, incorporated existing stations of the ambient Surface Water Chemical Monitoring Network, which is administered jointly by NJDEP and the USGS [7]. Furthermore, so as to gauge the effects of major tributaries and larger lakes, many AMNET sites were located near their confluence or outlet. Also considered when selecting sites were known sources of contamination (e.g. point-source discharges, agricultural operations) and significant natural features such as wetlands, parks or wildlife management areas.

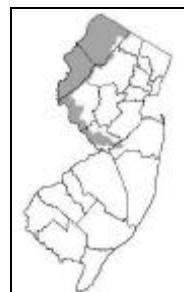


Figure 2

Map of 1997 – '98 study area

Exact AMNET site locations were determined via the Global Positioning System (GPS) using Trimble Pathfinder units and the appropriate correction sources utilized by NJDEP. All positions were logged into the Geographical Information System (GIS) (see Maps 1 – 7, Appendix A).

FIELD & LABORATORY METHODS

Benthic macroinvertebrate sampling and analyses were performed in accordance with the NJDEP Field Procedures Manual [8], Rapid Bioassessment (RBP) Protocol II guidelines of the USEPA [2] and Standard Operating Procedures (SOP) of the BFWM Aquatic Biomonitoring Laboratory [9].

Field Collection

Because the low gradient of the southern regions precludes streams from having dominant riffle areas (the preferred sampling habitat) we modified the RBP field methods for New Jersey streams by collecting multi-habitat sampling. This type of sampling includes both riffle and run areas, with various types of substrate (e.g. fine sediment, gravel/rocks, woody debris, stream and bank vegetation), plus coarse particulate matter or leaf litter (CPOM). This would minimize habitat or substrate variation between stations, and include all likely functional groups of macroinvertebrates. Samples were collected in semi-quantitative fashion either with a Surber Sampler, kick net, Petite Ponar dredge, or by hand picking. During the field investigation, semi-qualitative observations of habitat, surrounding land use, potential pollution sources, and other aquatic biota were recorded, although these did not figure into the final numerical rating. At each site, the entire sample was sieved through a standard #30 mesh device, put into wide-mouth glass jars, and preserved with 5 to 10% formalin (to 20% in cases of excessive organic loading).

Sample Sorting & Identification

In the laboratory, subsamples of 100 individuals were taken by first evenly distributing the composited sample on a grid in a light-colored pan, then removing all organisms from randomly-selected grids until a total of at least 100 organisms was obtained. The macroinvertebrates were identified to species (where possible), or at least to family level, and counted using 7 to 30X stereozoom and 40 to 400X compound magnification. A comprehensive collection of taxonomic keys and other references, including functional (or niche) descriptions and pollution tolerance classifications for most species, is maintained in the laboratory. An indexed list of these is given in the Laboratory SOP [9]. Consultation with other scientists in the field provides added assistance and confirmation, when needed.

DATA ANALYSIS

Biological impairment may be caused by several major factors such as organic enrichment, habitat degradation, or toxicological effects. It may be manifested in several aspects of the benthic macroinvertebrate community; these include absence of pollution-sensitive taxa, especially the EPT group, i.e. Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies); in excessive dominance of pollution-tolerant taxa such as Chironomidae (midges) and Oligochaeta (worms); in low overall taxa numbers, or with other perceptible differences in community structure relative to a reference condition.

Benthic Community Analysis

The data analysis is an important part of the RBP protocol, developed under USEPA auspices as an expedient and cost-effective monitoring tool. It recognizes a multiple approach, utilizing several "biometrics," that measure different components of community structure, including population and functional parameters, each with a different range of sensitivity to pollution stresses [2, 4]. The use of a variety of biometrics assures a more robust or valid assessment; therefore, an anomaly in any one metric is less likely to invalidate the study findings. The results are integrated through common scoring criteria, derived from an established comparable database, to determine a final numerical rating and consequent biological condition category (see Table 1). This provides the analyst with an easily communicated evaluation of relative impairment, referred to in this report as the "bioassessment rating." For RBP II protocols, results are based on 100 organism sub-samples, and scoring criteria are validated for family level taxonomy, giving three final rating categories (non-impaired, moderately impaired, and severely impaired).

The biometrics we employ are modified from RBP II methods, having been statistically validated for New Jersey based upon data from 200 stream sites throughout the state [10]. The final numerical rating is referred to as the "New Jersey impairment score" (NJIS). The scoring criteria and rating categories are presented in Table 1. The metrics from which the NJIS is derived are explained below:

1. **Total Taxa or Taxa Richness** (# families) — an index of community diversity; the number usually increases with increasing water or habitat quality.
2. **Percent Contribution of the Dominant Family** (to the total # families) — dominance by relatively few species/families would indicate environmental stress.
3. **# EPT Families** — the number of families represented within the orders Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies), which are generally pollution-sensitive.
4. **Percent EPT** (of the total # individuals) — would increase with increasing water quality.
5. **Hilsenhoff (Family) Biotic Index** — tolerance values of 0 - 10 assigned to individual families increase as water quality decreases; summarizes the overall pollution tolerance of the entire benthic macroinvertebrate community with a single value.

Comparison with 1992 — 1993 Results

In evaluating the 1997–1998 upper Delaware data against that for 1992–1993, a significant improvement or decline was considered to have occurred when the score (NJIS) changed the bioassessment rating. A complete list of site-by-site comparisons is presented in Table 2, where a (+) indicates a significant improvement, a (-) indicates a significant decline, and a (/) indicates no change in rating; a slash may have a (+) or a (-) indicating that the score improved or declined, but the bioassessment rating did not.

Morphological Abnormalities

Occasionally, morphological abnormalities have been found in individual macroinvertebrates recovered in our AMNET collections. These deformities have been most readily detected in the Chironomidae (midges), where they occur primarily in the head appendages (antennae) and mouth parts (mentum and mandibles). While the incidence has been most frequent in the chironomids, especially those species categorized as detritivores, herbivores or periphyton feeders, abnormalities have also been observed in individuals of other taxonomic groups. Although this is not a factor in the NJIS data analysis, such features are noted, as they may signify possible contaminants or stressful conditions in the respective drainages.

In the course of identification, chironomid larvae were examined for abnormalities. These results are summarized by sample site in Table 3. For chironomidae, the data is displayed as (# of chironomids with abnormalities / # of chironomids examined). For all other taxa, just the number of individuals with abnormalities is presented. Deformities found in greater than five percent (> 5%) of chironomids examined were considered to be significant (personal communication — R. Bode, New York Department of Environmental Conservation; J. Kurtz, NJDEP). Abnormalities were considered to be "chronic" at a particular station if that site yielded > 5% abnormalities for both the 1992-1993 and 1997-1998 sampling periods (see Table 3). Photographic examples of abnormalities in midge larvae and amphipods (scuds), plus maps of the sites where these were found, are contained in Appendix B. AMNET sites found with significant and chronic abnormalities in chironomids are also indicated in Maps 1-7.

SUPPLEMENTAL ANALYSIS / EVALUATION

Habitat Assessment

The physical attributes of habitat play an integral role in the health of the macroinvertebrate community. Where stations are physically comparable, detected impacts can be attributed to water quality factors; however, habitat degradation alone can account for biological impairment in a stream [2]. Parameters we evaluated included in-stream substrate, channel morphology, bank structural features, and riparian vegetation. The area evaluated included the sample site and its immediate surroundings (usually within a 100 – 200 foot radius).

The qualitative habitat assessment involves four condition categories, rating each parameter as optimal, suboptimal, marginal or poor based on recently revised USEPA criteria [11]. Habitat assessments may be temporarily downgraded by adverse weather conditions, such as excessive rainfall or prolonged drought (which existed during this study period). It should also be noted that habitat assessments are performed independently of the macroinvertebrate community analysis; thus they do not factor into the final impairment score, but are used primarily as supplementary information. For each parameter, the range of conditions and the numerical rating scale are presented for high and low gradient streams, respectively, in Table 4. Comparisons of these final scores against the respective NJIS scores and relative trends, are shown in **Appendix C**.

All streams in the northern portion of New Jersey, i.e. the Piedmont, Valley/Ridge and Highlands regions, are considered to be “high gradient” streams, having substrates of rock and cobble of various sizes, and with relatively swift flow. Those in the Coastal Plain region of southern New Jersey are considered as “low gradient” streams, having slower flow and more homogeneous substrates, primarily of sand or gravel and finer sediments. These major physiographic subregions are illustrated in the New Jersey State EcoMap [12]. The transition from high gradient to low gradient is marked by the “Fall Line,” a geologic/topographic feature that bisects New Jersey in a southwest–northeasterly direction from the Delaware River at Trenton through the lower Raritan River near New Brunswick. The trajectory of the Fall Line is superficially traced by the lower Assunpink Creek at the southwest juncture (see Map # 6), and its alignment with Lawrence Brook to the northeast in the Raritan River drainage. Administratively, the Assunpink sub-basin forms the southern boundary of the Upper Delaware Water Region, the area of the present study, with terrain principally of high gradient.

Sediment Toxicity Testing

To supplement the results of the benthic macroinvertebrate sampling, the BFWM from 1996 to 1998 performed acute sediment toxicity tests on several AMNET sites that exhibited “severely impaired” biological conditions in the earlier upper Delaware survey. The methods conformed to standardized USEPA protocols as reflected in our laboratory Standard Operating Procedures [9]. The amphipod, *Hyalella azteca*, was used as the test organism in the 10-day tests that measured effects on both survival and growth. Results from the test sites were compared to the responses observed in reference sediment from non-impaired AMNET sites that were similar in morphology or habitat features. One site in Warren County (AN0042, Map 3), found to be severely impaired in the 1992–1993 sampling, was tested. The test site and corresponding reference site is as follows:

Test Site	Reference Site Used
AN0042 Furnace Brook	AN0045 Beaver Bk

RESULTS AND DISCUSSION

Overall, bioassessment ratings developed for each of the monitoring stations were used as the basis for evaluating the degree of biological impairment within the coincident stream segments. The estimated bioassessment ratings for each stream segment are presented as color-coded highlighted segments on the GIS maps # 1-7. In each WMA, starting from the AMNET station farthest downstream, estimated bioassessment ratings were assigned to the stream segments by interpolating from the downstream station to the next contiguous upstream station. These ratings are best estimates of the in-stream biological impairment based upon the available data. For any given segment, however, the actual in-situ conditions may vary due to unknown differences in habitat or sources of degradation. Detailed taxonomic and statistical data, bioassessment ratings, habitat assessment scores and observations, are given in Appendix D.

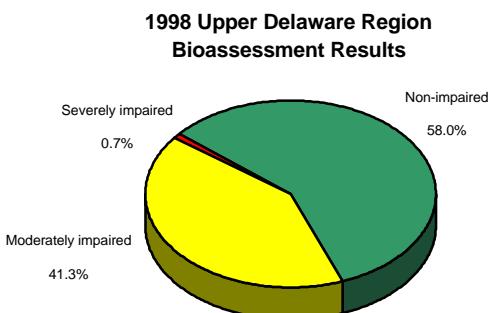


Figure 3

Overall, out of 139 monitoring stations sampled during this study period, 80 or **58%** were rated as **NON-IMPAIRED**, 57 or **41.3%** were rated as **MODERATELY IMPAIRED**, and one site (**0.7%**) was rated as **SEVERELY IMPAIRED** (see Figure 3).

For comparison, Figure 4 depicts the results of 127 monitoring sites within the same Watershed Management Areas that were sampled during the 1993 study period.

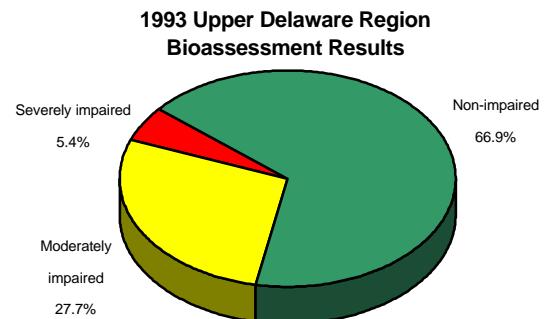


Figure 4

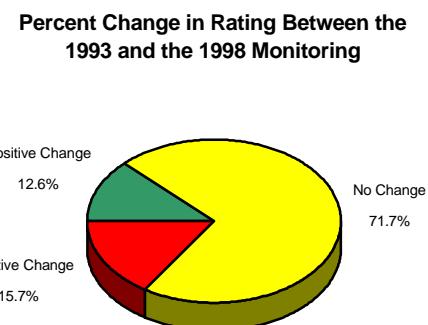


Figure 5

Figure 5 displays the percentage of change in rating that has occurred for the 127 sites that were sampled during both the 1993 and 1998 monitorings. The green indicates a positive change, yellow indicates no change, and red indicates a change for the worse (see Table 2). Notably, fewer severely impaired sites were found in 1998 than in 1993; however, the 1998 data also revealed more moderately impaired sites and fewer non-impaired sites (Figures 3 & 4).

In the upper Delaware Water Region, the majority of NJIS scores (58%) are high and fall within the "non-impaired" range; less than half are "moderately impaired" and only one site (AN0117) is rated as "severely impaired" (from Table 2 and Appendix D). The entire Upper Delaware Region is situated north of the "Fall Line" and superimposes on portions of the Ridge and Valley, Highlands, Reading Prong and Piedmont physiographic sub-regions [12]. Significantly, 52 of the 80 non-impaired sites (65%) are located within the Ridge and Valley and Reading Prong sub-regions in the northernmost sector of the Delaware drainage basin, which constitutes a major portion of WMA #1. This area features forested uplands and high gradient terrain. Of the moderately impaired sites, 35 of 57 (61.4%) are located within the Wallkill sub-basin (WMA #2), which drains northwestward to the Hudson River in New York and the Piedmont sub-region in the southern portion of the upper Delaware drainage (WMA #11). The latter two regions feature somewhat lower relief, with agricultural areas throughout and with greater urbanization (e.g. Trenton) in the southernmost portion. Thus, impacts of an anthropogenic nature are reflected in the biotic integrity of our stream systems. The Assunpink Creek drainage in WMA #11 constitutes the southern boundary of the Upper Delaware Water Region, and its main stem marks the "Fall Line" that separates this region from the low-gradient terrain of the Atlantic Coastal Plain.

Macroinvertebrate Abnormalities

Locations of all AMNET sites yielding macroinvertebrate abnormalities are shown in Appendix B, while only those sites with "significant" (> 5% of the individuals examined) and "chronic" (> 5% in both 1992-1993 and 1997-1998) abnormalities are shown in Maps 1-7. In the current samples, 50 of the 138 AMNET sites in the Upper Delaware Water Region (36%) exhibited morphological abnormalities in at least one individual examined; 29 sites (21%) exhibited significant numbers of abnormalities (75%); only seven sites (5%) yielded chronic abnormalities. The occurrence of chronic abnormalities at a given site signifies the presence of chronic environmental stressor(s), possibly from toxicants, in the vicinity, therefore indicating that these areas should be more intensely investigated. Such locations found in the current upper Delaware AMNET sampling included three in the Pequest River and Musconetcong River/Pohatcong Creek sub-basins (Maps 3 and 4, WMA 1), and one in Moores Creek (Map 5, WMA 11).

Habitat Assessment vs. Biological Condition

Habitat assessment scores and corresponding NJIS scores (Appendix D) for each station in the upper Delaware AMNET area are plotted along a spatial gradient, north to south/upstream to downstream, in Appendix C. In this scenario, paralleling of the trend lines, in some degree (which is seen in much of the data), would reflect a direct relationship or positive correlation between the two parameters. In the northernmost regions (WMA 1 and, to a lesser extent, WMA 2), spatial trends are seen to parallel each other closely, with both at high levels, thus reflecting favorable habitat and water quality. Southward from here (WMA 11), we see a rather abrupt decline in NJIS scores relative to habitat scores; therefore, the influence of other factors (e.g. physiochemical conditions) is indicated, as the more urban and agricultural areas are approached.

In a few situations, a non-impaired biological community was found where habitat appeared to be impaired. Conversely, in some cases of optimal habitat, an impaired biological community was found; therefore, water quality or other physiochemical factors likely were involved. Habitat assessments were not performed in the earlier (1992-1993) AMNET surveys [5, 6]; thus, no temporal comparisons could be made. Further assessments and statistical analyses relating habitats assessments to biological condition should be conducted in order to reveal possible trends and correlations.

Sediment Toxicity Test Results

Acute toxicity, as measured by mortality, was not demonstrated in the test performed, as none of the survival responses observed were significantly different from those observed in the controls. Growth responses (average dry weights) also were not significantly different from those of the control, thus indicating no chronic effects in this regard over the 10-day test period. Since the test site results largely showed no significant difference from the control results, the severe impairment levels previously found were likely due to other causes, such as habitat alteration or various physiochemical factors. This also does not preclude the presence of toxic substances at low, but chronically toxic, levels undetectable by the present methodology, or which may have been introduced into the stream episodically, rather than continuously. Therefore, it is advisable based on these study results that supplemental sampling be performed for target analytes such as fertilizer nutrients (usually forms of nitrogen and phosphorus), pesticides, or other suspected toxic compounds.

Causes and Conditions of Impairment

Biological impairment, as determined through RBP analysis, is manifested by alterations or differences in macroinvertebrate community structure, compared to a reference or "ideal" condition. In an impaired situation, species of pollution-tolerant groups (such as worms and midges) tend to dominate over pollution-intolerant forms (e.g. mayflies, stoneflies, etc.), with an overall depression in species diversity. Such discrepancies are typically due to degraded instream environmental conditions, which may be caused by various human activities or land-uses and, in some cases, by natural features or events. Environmental factors that may adversely affect stream biology, including both chemical and physical parameters, are listed below:

1. Lack of dissolved oxygen
2. Higher than normal temperature
3. Excessive turbidity
4. Presence of toxicants (in various chemical forms)
5. Eutrophication (= excessive nutrients promoting undesirable vegetation or algal blooms, and increased turbidity)
6. Degraded habitat (see Table 4)
 - a. lack of bank vegetation/canopy (= poor bank stability, lack of shade)
 - b. excessive sedimentation (= poor substrate and water clarity)
 - c. lack of streamflow (= low dissolved oxygen, possible sedimentation, undesirable vegetation)

Inter-related human activities or practices, land uses, and natural features or events contributing to degraded stream quality:

1. Deforestation/development/construction (largely via runoff from non-point sources)
2. Urbanization/industrialization (largely via runoff from non-point sources)
3. Agricultural operations (largely via runoff from non-point sources)
4. Municipal or industrial wastewater discharge (point source)
5. Artificial channelization or habitat alteration
6. Upstream impoundment, lake or pond
7. Drought conditions

As reflected in the present study results, human land uses and practices, superimposed on the physical terrain, play a major role in controlling the degree of pollution or degradation in a stream system.

Levels of benthic community impairment (or lack of it) have been statistically related to different physiographic land types, corresponding land uses and other anthropogenic factors, on a statewide scale using data generated from the AMNET program [13].

The following section discusses observed impairment of AMNET sites within each Water Management Area of the Upper Delaware Water Region, and possible contributing factors.

Evaluation by WMA

Watershed Management Area #1 extends from Clove Brook in the northernmost corner of New Jersey, to the Musconetcong River, with a total of 74 AMNET sites sampled (see Maps 1, 2, 3, & 4). Figure 6 shows that the majority of the sites (68.9%) were rated as non-impaired while the remaining 31.1% were rated as moderately impaired. No sites were found to be severely impaired. A significant improvement over the earlier results was seen at seven sites, and a significant decline at eight sites (see Table 2). Figure 7 depicts the results of the 1993 survey for comparison. While the

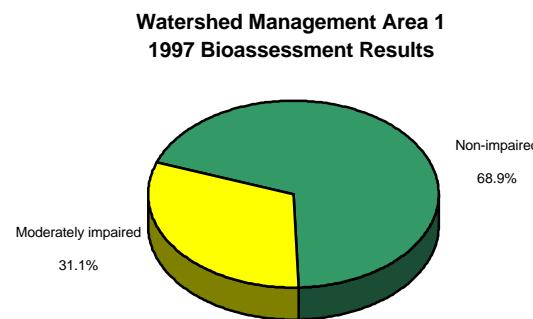


Figure 6

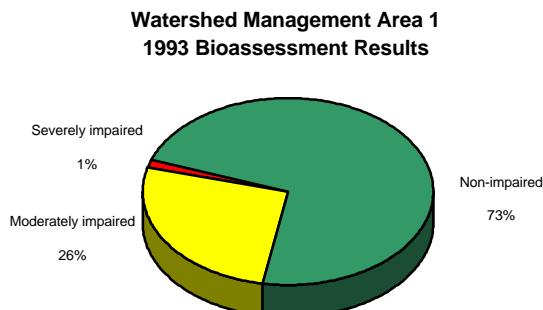


Figure 7

current samples, abnormalities in chironomid larvae were found to be chronic at eight sites (AN0039, AN0041, AN0045, AN0052, AN0055, AN0065, AN0070, and AN0072); eleven additional sites, although without chronic abnormalities, exhibited significant levels of abnormalities in both chironomid larvae and other invertebrates (see Table 3).

Watershed Management Area #11 extends from Hakihokoke Creek in northern Hunterdon County to the Assunpink Creek in Trenton, with a total of 47 AMNET sites sampled (see Maps 5, & 6). Figure 8 shows that 53.2% of the sites were rated non-impaired, 44.7% were rated as moderately impaired, and only one site (2.1%) was rated as severely impaired. A significant improvement was seen at nine sites, and a significant decline at four sites (see Table 2). Figure 9 depicts the results of the earlier (1993) survey for comparison.

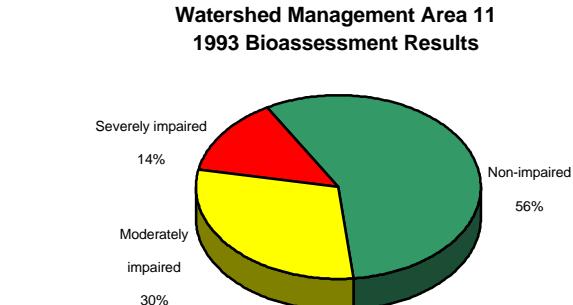


Figure 9

in 34% of impaired sites. In the current study, abnormalities in chironomid larvae were found to be chronic at three sites (AN0100, AN0106, and AN0113), while nine additional sites, although without chronic abnormalities, exhibited significant levels of abnormalities in chironomid larvae (see Table 3).

Watershed Management Area #2 encompasses the Wallkill River and its tributaries, with 17 AMNET sites sampled (see Map 7). As shown in Figure 10, a non-impaired rating was given to 17.6% of the sites, while the remaining 82.4% were given a moderately impaired rating. No site was found to be severely impaired, yet no sites were found to be significantly improved. A significant decline was seen at eight sites (see Table 2). Figure 11 depicts the results of the 1993 survey for comparison. Since it was first studied under the AMNET program [6], there has been a general decline in NJIS scores in the Wallkill area.

Biological impairment is largely attributed to physiochemical conditions, although suboptimal habitat may

be a factor in 64% of impaired sites. Agriculture appears to be contributing to degraded conditions at 71% of impaired sites. No abnormalities in chironomid larvae or other invertebrates were found in WMA #2 during the current sampling period (see Table 3).

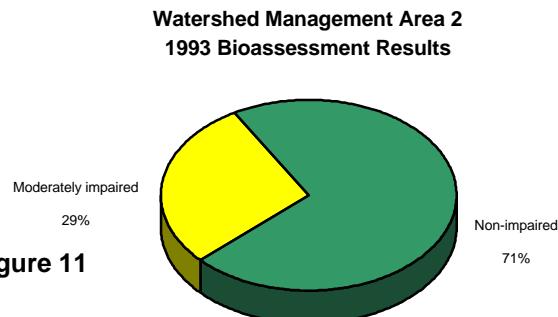


Figure 11

Watershed Management Area 11
1997 Bioassessment Results

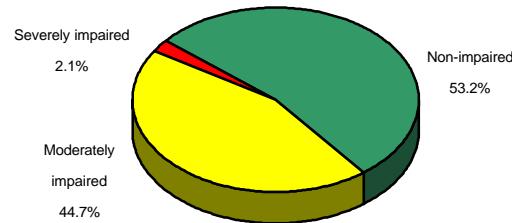


Figure 8

Overall, WMA #11 exhibited a slight improvement, especially in the Assunpink Creek drainage. The degree of biological impairment in the Assunpink, however, is generally greater than in the smaller drainages to the north. Habitat scores from WMA #11 sites are favorable, except in the lower Assunpink creek (which flows through the urban Trenton area), thus it appears that physiochemical conditions are having the greater influence on impairment levels. Physiochemical conditions appear to be factors in 52% of impaired sites, and suboptimal habitat in 41%. Agriculture is a possible source of degraded (physiochemical or habitat) conditions

in 34% of impaired sites.

In the current study, abnormalities in chironomid larvae were found to be chronic at three sites (AN0100, AN0106, and AN0113), while nine additional sites, although without chronic abnormalities, exhibited significant levels of abnormalities in chironomid larvae (see Table 3).

Watershed Management Area 2
1997 Bioassessment Results

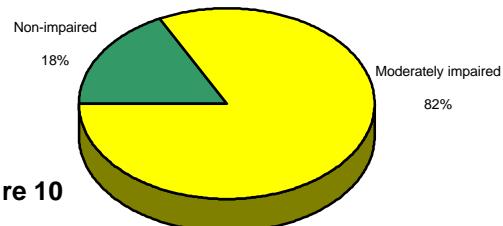


Figure 10

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TABLE 1

BIOLOGICAL CRITERIA FOR SCREENING WATER QUALITY IN NEW JERSEY FRESHWATER STREAMS*

Scoring Criteria for Rapid Bioassessments¹

Biometrics	6	3	0
Taxa Richness (total Families)	> 10	10-5	4-0
E+ P+ T Index ² (EPT)	> 5	5-3	2-0
Percent Dominance ³ (%CDF)	< 40	40-60	> 60
Percent EPT ⁴ (%EPT)	> 35	35-10	< 10
Modified Family Biotic Index ⁵ (FBI)	< 5	5-7	> 7

NOTE: The previous AMNET reports (1994-1996) contained incorrect number ranges for Modified Family Biotic Index. Using the incorrect numbers could lower the biological assessment on 9% of the sites evaluated. The numbers now presented in this table are correct and scores from previous reports were calculated using these ranges. No incorrect biological assessments exist in the previous reports.

Biological Assessment	Total Score
Non-impaired	24-30
Moderately Impaired	9-21
Severely Impaired	0-6

Attributes

Non-impaired: benthic community comparable to other undisturbed streams within the region; community characterized by a maximum taxa richness, balanced taxa groups, and good representation of intolerant individuals.

Moderately Impaired: macroinvertebrate richness reduced, in particular EPT taxa; reduced community balance and numbers of intolerant taxa.

Severely Impaired: benthic community dramatically different from those in less impaired situations; macroinvertebrates dominated by a few taxa, but with many individuals; only tolerant individuals present.

*From Kurtenbach, 1991, based on RBP II protocols.

¹Follows RBP Protocol II; using 100 organism subsample, family level taxonomy

²Ephemeroptera, Plecoptera, Trichoptera

³% contribution of the dominant family

⁴Including the hydropsychid family

⁵Also known as the Hilsenhoff Biotic Index

Table 2

Comparative Scores / Ratings (see notes)

Watershed Management Areas 1, 2, and 11

Station	NJ Impairment Score		Change in Rating	Habitat Score		Station	NJ Impairment Score		Change in Rating	Habitat Score		Station	NJ Impairment Score		Change in Rating	Habitat Score	
	92 / 93	97 / 98					92 / 93	97 / 98					92 / 93	97 / 98			
001	9	9	/	97		040	24	21	—	155		081	27	30	/+	165	
002	18	21	/+	140		040A	-	18		162		082	30	30	/	171	
003	30	24	/-	167		041	30	30	/	156		083	24	30	/+	148	
004	30	30	/	194		042	0	21	+	98		084	21	21	/	144	
005	27	30	/+	162		043	30	27	/-	148		085	24	18	—	136	
005A	-	30		143		044	15	15	/	146		086	21	30	+	151	
006	30	30	/	170		045	30	30	/	113		087	27	24	/-	146	
007	30	30	/	184		046	30	24	/-	133		088	24	30	/+	148	
008	30	30	/	177		047	27	30	/+	165		089	30	30	/	138	
009	30	30	/	182		048	27	30	/+	163		090	9	15	/+	168	
010	-	30		196		049	30	30	/	147		091	24	21	—	165	
011	30	27	/-	183		050	30	30	/	159		092	21	21	/	163	
012	30	30	/	163		051	30	30	/	156		093	27	9	—	170	
013	-	-		-		052	27	24	/-	97		094	30	30	/	168	
014	21	30	+	146		053	9	24	+	116		095	30	24	/-	168	
015	18	15	/-	141		054	30	30	/	180		096	27	27	/	166	
016	27	15	—	147		055	12	15	/+	133		097	24	24	/	166	
017	18	24	+	107		056	30	30	/	147		098	30	30	/	166	
018	18	18	/	105		057	21	21	/	121		099	21	18	/-	141	
019	27	18	—	118		058	27	27	/	158		100	27	24	/-	144	
020	24	-		-		059	15	30	+	156		101	18	27	+	166	
021	30	30	/	171		060	30	30	/	146		102	24	27	/+	170	
022	15	18	/+	168		061	30	24	/-	120		103	18	30	+	166	
023	21	-		-		062	18	21	/+	124		104	9	18	/+	162	
023A	-	30		186		063	18	30	+	170		105	30	24	/-	166	
024	30	30	/	140		064	27	30	/+	181		106	24	24	/	140	
025	30	27	/-	144		065	24	27	/+	177		107	24	24	/	145	
026	24	27	/+	98		066	27	27	/	173		108	6	9	+	158	
027	21	30	+	87		067	24	30	/+	107		109	24	9	—	167	
028	30	30	/	182		068	24	21	—	123		109A	-	12		155	
029	30	30	/	146		069	30	30	/	148		109B	-	15		152	
030	15	21	/+	95		070	18	15	/-	165		110	6	12	+	147	
031	30	30	/	142		071	27	30	/+	159		111	6	12	+	128	
032	27	18	—	185		072	27	15	—	176		112	6	12	+	127	
032A	-	30		155		073	24	30	/+	185		113	3	15	+	132	
033	30	27	/-	155		074	30	27	/-	184		114	15	18	/+	121	
034	30	-		-		075	30	30	/	174		115	12	15	/+	92	
035	18	12	/-	127		076	30	30	/	176		115A	-	18		131	
036	24	9	—	126		077	27	30	/+	85		116	15	15	/	122	
037	30	30	/	164		078	30	30	/	171		117	0	6	/+	139	
038	24	21	—	144		079	21	30	+	146		118	12	9	/-	104	
039	27	27	/	149		080	30	30	/	180		294	30	21	—	164	

NOTES:

Comparison of NJ impairment score with earlier study results:

- + indicates positive change in rating
- indicates negative change in rating
- / indicates no change in rating
- /+ or - indicates change in score, but not in rating (see Table 1)

<u>NJ Impairment Score</u>	<u>Value</u>	<u>Habitat Score</u>	<u>Value</u>
Non-Impaired	24 - 30	Optimal	160 - 200
Moderately Impaired	9 - 21	Sub-optimal	110 - 159
Severely Impaired	0 - 6	Marginal	60 - 109
		Poor	< 60

New Jersey AMNET Study — 1998 Upper Delaware Region

Table 2 (continued)

Comparative Scores / Ratings (see notes)

Watershed Management Areas 1, 2, and 11

NOTES:

Comparison of NJ impairment score with earlier study results:

+ indicates positive change in rating

— indicates negative change in rating

/ indicates no change in rating

/+ or /- indicates change in score, but not in rating (see Table 1)

NJ Impairment Score	Value	Habitat Score	Value
Non-Impaired	24 - 30	Optimal	160 - 200
Moderately Impaired	9 - 21	Sub-optimal	110 - 159
Severely Impaired	0 - 6	Marginal	60 - 109
		Poor	< 60

Table 3

Macroinvertebrate Abnormalities (see notes)

Watershed Management Areas 1, 2, and 11

Station	1992 / 93	1997 / 98	Station	1992 / 93	1997 / 98	Station	1992 / 93	1997 / 98
003	2/12 *		085		3/54 *			
004		1/9 *	089		1/22			
007		1/26	091	3/30 *				
014		4/15 *	093		1/62			
019		1/8 *	096	1/16 *				
027		2/16 *	099		3/24 *			
028		1/11 + 1 *	100	2/31 *	3/22 *			
031		2/6 *	101		+ 1			
035		4/27 *	104		+ 3			
038		1/44	105		3/24 *			
039	3/15 *	4/11 *	106	1/30	4/18 + 1 *			
041	1/16 *	2/12 *	107	1/5 *				
042		3/9 + 10 *	109		+ 1			
043		1/30	109A		+ 3			
045	1/6 *	4/20 *	109B		1/15 *			
052	3/30 *	1/43	111		3/24 *			
054		1/13 *	112		2/21 *			
055	1/12 *	1/12 *	113	1/34	1/39			
057	2/28 *		114		1/33			
058		3/8 *	115		+ 1			
059	1/32		115A		1/26			
060	1/32		118		+ 13			
061		1/10 + 1 *	294	1/8 *				
062	3/24 *		302	1/10 *				
064	1/23	+ 1	305	1/9 *				
065	2/10 *	3/9 + 1 *	308	2/22 *				
066	4/19 *		309	1/45				
067		1/36						
068	1/3 *							
069	2/14 *	+ 1						
070	1/31	2/46						
072	1/14 *	2/29 + 2 *						
073		+ 1						
075		1/9 *						
076		1/25						
078		1/16 *						
079		1/13 *						
080		2/33 *						
083	5/35 *							
084	2/61							

NOTES:

chironomids with deformities / # chironomids examined

+ — indicates the number of non-chironomids having abnormalities.

* — indicates significant levels (> 5%), although not statistically evaluated.

abnormalities considered chronic if they appear in both the 1992 / 1993 and the 1997 / 1998 columns.

Table 4 — HABITAT ASSESSMENT FOR HIGH GRADIENT STREAMS

Habitat Parameter	Condition Category													
	Optimal			Suboptimal			Marginal			Poor				
1. Epifaunal Substrate/Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and not transient).						30-50% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).			Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.				
	20	19	18	17	16		15	14	13	12				
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment.						Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.			Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.				
	20	19	18	17	16		15	14	13	12				
3. Riffle Quality	Well-developed riffle and run; riffle is as wide as stream and length extends two times the width of stream; abundance of cobble. (Boulders prevalent in headwater streams).						Riffle is as wide as stream but length is less than two times width; abundance of cobble; boulders and gravel common.			Riffles or runs virtually nonexistent; bedrock prevalent; cobble lacking				
	20	19	18	17	16		15	14	13	12				
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (< 20% for low-gradient streams) of the bottom affected by sediment deposition.						Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.			Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.				
	20	19	18	17	16		15	14	13	12				
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.						Water fills > 75% of the available channel; or < 25% of channel substrate is exposed.			Very little water in channel and mostly present as standing pools.				
	20	19	18	17	16		15	14	13	12				
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.						Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yrs.) may be present, but recent channelization is not present.			Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.				
	20	19	18	17	16		15	14	13	12				
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream < 7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. All 4 velocity/depth patterns present.						Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. Only 3 of 4 velocity/depth patterns present (i.e. slow [$< 0.3 \text{ m/s}$]-deep [$> 0.5 \text{ m}$]; slow-shallow; fast-deep; fast-shallow).			Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of > 25. Dominated by one velocity/depth pattern.				
	20	19	18	17	16		15	14	13	12				
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. SCORE ____ (LB) SCORE ____ (RB)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. < 5% of bank affected.						Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.			Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.				
	Left Bank	10	9		8	7	6		5	4	3	2	1	0
9. Bank Vegetative Protection (score each bank) SCORE ____ (LB) SCORE ____ (RB)	Left Bank Right Bank	10	9		8	7	6		5	4	3	2	1	0
	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.						70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.			50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.			Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.	
10. Riparian Vegetative Zone Width (score each bank riparian zone) SCORE ____ (LB) SCORE ____ (RB)	Left Bank Right Bank	10	9		8	7	6		5	4	3	2	1	0
	Width of riparian zone > 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.						Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.			Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.			Width of riparian zone < 6 meters; little or no riparian vegetation due to human activities.	
Left Bank Right Bank	10	9		8	7	6		5	4	3	2	1	0	
Left Bank Right Bank	10	9		8	7	6		5	4	3	2	1	0	

HABITAT SCORES	VALUE
OPTIMAL	160 C 200
SUB-OPTIMAL	110 C 159
MARGINAL	60 C 109
POOR	< 60

Table 4 (cont.) — HABITAT ASSESSMENT FOR LOW GRADIENT STREAMS

Habitat Parameter	Condition Category																	
	Optimal			Suboptimal			Marginal			Poor								
1. Epifaunal Substrate/Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and not transient).						30-50% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).											
SCORE	20 19 18 17 16						15 14 13 12 11											
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.						All mud or clay or sand bottom; little or no root mat; no submerged vegetation present.											
SCORE	20 19 18 17 16						15 14 13 12 11											
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.						Majority of pools large-deep; very few shallow.											
SCORE	20 19 18 17 16						15 14 13 12 11											
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% < 20% for low-gradient streams) of the bottom affected by sediment deposition.						Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.											
SCORE	20 19 18 17 16						15 14 13 12 11											
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.						Water fills > 75% of the available channel; or < 25% of channel substrate is exposed.											
SCORE	20 19 18 17 16						15 14 13 12 11											
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.						Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yrs.) may be present, but recent channelization is not present.											
SCORE	20 19 18 17 16						15 14 13 12 11											
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.						The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.											
SCORE	20 19 18 17 16						15 14 13 12 11											
8. Bank Stability (score each bank)	Bank stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. < 5% of bank affected.						Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.											
SCORE ____ (LB)	Left Bank 10 9						8 7 6											
SCORE ____ (RB)	Right Bank 10 9						8 7 6											
9. Bank Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.						70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.											
SCORE ____ (LB)	Left Bank 10 9						8 7 6											
SCORE ____ (RB)	Right Bank 10 9						8 7 6											
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone > 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.						Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.											
SCORE ____ (LB)	Left Bank 10 9						8 7 6											
SCORE ____ (RB)	Right Bank 10 9						8 7 6											

HABITAT SCORES	VALUE
OPTIMAL	160 C 200
SUB-OPTIMAL	110 C 159
MARGINAL	60 C 109
POOR	< 60

MAPS

1998 Upper Delaware AMNET Study WMAs 1, 2, & 11

AMNET site locations and their respective biological ratings, for each major sub-basin, are shown in maps 1-7. Also identified are sites that exhibited significant and chronic macroinvertebrate abnormalities.

Appendix A — Station Numbers and Locations for the 1998 Upper Delaware Region AMNET Study

Site	Stream	Latitude Longitude	Watershed Management Area
AN0001	Clove Bk	41 18'53.373"N 74 40'07.154"W	1
AN0002	Clove Bk	41 21'06.335"N 74 41'10.161"W	1
AN0003	Shimers Bk	41 18'46.731"N 74 46'43.451"W	1
AN0004	Little Flat Bk	41 17'02.719"N 74 45'29.275"W	1
AN0005	Little Flat Bk	41 15'45.716"N 74 47'33.516"W	1
AN0005A	Little Flat Bk	41 11'54.521"N 74 50'08.747"W	1
AN0006	Big Flat Bk	41 12'00.054"N 74 48'55.832"W	1
AN0007	Flat Bk	41 09'25.965"N 74 52'38.074"W	1
AN0008	Flat Bk	41 06'05.606"N 74 57'43.855"W	1
AN0009	Van Campens Bk	41 05'43.209"N 74 55'45.708"W	1
AN0010	Van Campens Bk	41 04'22.070"N 74 57'45.202"W	1
AN0011	Van Campens Bk	41 03'27.651"N 75 00'11.308"W	1
AN0012	Dunnfield Ck	40 58'14.065"N 75 07'34.898"W	1
AN0013	Stony Bk	40 56'22.413"N 75 06'13.117"W	1
AN0014	UNT to Paulins Kill	41 04'00.778"N 74 41'15.963"W	1
AN0015	Paulins Kill	41 05'07.878"N 74 41'57.964"W	1
AN0016	UNT to Paulins Kill	41 06'21.295"N 74 40'56.237"W	1
AN0017	Culvers Ck	41 10'05.657"N 74 47'30.702"W	1
AN0018	Culvers Ck	41 09'21.025"N 74 46'57.541"W	1
AN0019	Dry Bk	41 10'09.042"N 74 44'10.326"W	1
AN0020	Dry Bk	41 08'36.840"N 74 44'43.274"W	1
AN0021	Paulins Kill	41 06'13.513"N 74 45'29.351"W	1
AN0022	Paulins Kill	41 03'08.907"N 74 49'40.505"W	1
AN0023	Troy Bk	41 03'33.471"N 74 51'11.835"W	1
AN0023A	Troy Bk	41 05'05.510"N 74 49'37.287"W	1
AN0024	Trout Bk	41 03'20.519"N 74 51'41.591"W	1
AN0025	Paulins Kill	40 58'52.121"N 74 57'12.460"W	1
AN0025A	Blair Ck	41 04'19.874"N 74 55'13.513"W	1
AN0026	Blair Ck	41 03'00.829"N 74 56'40.113"W	1
AN0027	Blair Ck	40 58'54.804"N 74 57'35.356"W	1
AN0028	Jacksonburg Ck	41 02'20.775"N 74 57'53.670"W	1
AN0029	Jacksonburg Ck	40 59'14.684"N	1

Site	Stream	Latitude Longitude	Watershed Management Area
		74 58'43.178"W	
AN0030	Yards Ck	40 59'43.000"N 75 01'55.902"W	1
AN0031	Yards Ck	40 57'23.847"N 75 03'34.777"W	1
AN0032	Paulins Kill	40 55'15.243"N 75 05'17.479"W	1
AN0032A	Paulins Kill	40 58'00.450"N 75 01'14.763"W	1
AN0033	Delawanna Ck	40 53'52.815"N 75 04'19.347"W	1
AN0034	Ramseysburg Ck	40 53'05.044"N 75 03'36.520"W	1
AN0035	Pequest R	41 00'51.811"N 74 45'59.931"W	1
AN0036	UNT to Pequest R	40 59'07.663"N 74 45'52.968"W	1
AN0037	Pequest R	40 58'50.814"N 74 46'35.360"W	1
AN0038	Trout Bk	40 55'48.127"N 74 49'08.167"W	1
AN0039	Pequest R	40 55'17.022"N 74 50'25.852"W	1
AN0040	Bear Ck	40 55'48.566"N 74 53'05.961"W	1
AN0040A	Bear Ck	40 58'30.344"N 74 50'57.831"W	1
AN0041	Pequest R	40 51'58.398"N 74 54'19.347"W	1
AN0042	Furnace Bk	40 49'21.769"N 74 59'06.341"W	1
AN0043	Pequest R	40 49'49.847"N 74 58'39.953"W	1
AN0044	Mountain Lake Bk	40 51'10.847"N 74 59'07.246"W	1
AN0045	Beaver Bk	40 56'33.270"N 74 56'32.780"W	1
AN0046	Honey Run	40 53'33.971"N 74 58'40.558"W	1
AN0047	Beaver Bk	40 50'36.857"N 75 02'46.374"W	1
AN0048	Pequest R	40 49'45.841"N 75 04'55.768"W	1
AN0049	Pophandusing Bk	40 49'20.221"N 75 04'50.983"W	1
AN0050	Buck Horn Ck	40 46'17.971"N 75 07'50.883"W	1
AN0051	Lopatcong Ck	40 44'24.624"N 75 07'15.934"W	1
AN0052	Lopatcong Ck	40 42'07.878"N 75 08'12.891"W	1
AN0053	Lopatcong Ck	40 40'38.350"N 75 10'01.855"W	1
AN0054	Pohatcong Ck	40 50'18.689"N 74 53'59.968"W	1
AN0055	Pohatcong Ck	40 47'06.111"N 74 57'41.175"W	1
AN0056	Brass Castle Ck	40 45'53.533"N 75 00'43.295"W	1
AN0057	Pohatcong Ck	40 44'41.365"N 75 00'49.018"W	1
AN0058	Pohatcong Ck	40 42'57.959"N 75 04'18.230"W	1

Appendix A — Station Numbers and Locations for the 1998 Upper Delaware Region AMNET Study

Site	Stream	Latitude Longitude	Watershed Management Area
AN0059	Merrill Ck	40 45'00.107"N 75 05'06.940"W	1
AN0060	Merrill Ck	40 41'11.491"N 75 06'29.268"W	1
AN0061	Pohatcong Ck	40 37'29.855"N 75 11'08.755"W	1
AN0062	Musconetcong R	40 55'01.431"N 74 39'56.687"W	1
AN0063	Musconetcong R	40 54'08.398"N 74 42'48.549"W	1
AN0064	Musconetcong R	40 55'15.877"N 74 43'54.037"W	1
AN0065	Lubbers Run	40 57'51.270"N 74 40'28.210"W	1
AN0066	Lubbers Run	40 55'35.979"N 74 43'07.086"W	1
AN0067	Mine Brook	40 49'58.240"N 74 49'22.029"W	1
AN0068	Trout Brook	40 49'46.217"N 74 49'52.241"W	1
AN0069	Musconetcong R	40 48'46.767"N 74 50'29.995"W	1
AN0070	Hances Brook	40 48'16.140"N 74 51'37.606"W	1
AN0071	UNT to Musconetcong R	40 47'00.267"N 74 54'02.633"W	1
AN0072	Musconetcong R	40 43'22.996"N 74 57'35.801"W	1
AN0073	Musconetcong R	40 39'19.616"N 75 05'19.716"W	1
AN0074	Musconetcong R	40 35'33.407"N 75 11'17.230"W	1
AN0075	Hakihokake Ck	40 37'42.344"N 75 05'04.447"W	11
AN0076	Hakihokake Ck	40 35'02.591"N 75 05'07.655"W	11
AN0077	Hakihokake Ck	40 34'06.359"N 75 05'42.610"W	11
AN0078	Harihokake Ck	40 36'00.393"N 75 01'50.641"W	11
AN0079	Harihokake Ck	40 32'53.072"N 75 04'07.766"W	11
AN0080	Nishisakawick Ck	40 35'20.651"N 75 00'34.071"W	11
AN0081	Nishisakawick Ck	40 32'56.275"N 75 02'03.953"W	11
AN0082	Nishisakawick Ck	40 31'38.526"N 75 03'32.940"W	11
AN0083	Little Nishisakawick Ck	40 31'22.623"N 75 03'41.890"W	11
AN0084	Copper Ck	40 30'39.544"N 75 02'43.388"W	11
AN0085	Warford Ck	40 28'09.916"N 75 03'43.655"W	11
AN0086	Lockatong Ck	40 32'02.357"N 74 57'11.604"W	11
AN0087	Lockatong Ck	40 31'01.719"N 74 59'30.835"W	11
AN0088	Lockatong Ck	40 28'16.532"N 75 01'16.150"W	11
AN0089	Lockatong Ck	40 24'28.293"N 75 00'50.967"W	11
AN0090	Wickecheoke Ck	40 30'34.613"N	11

Site	Stream	Latitude Longitude	Watershed Management Area
		74 55'49.813"W	
AN0091	Wickecheoke Ck	40 29'08.865"N 74 58'13.799"W	11
AN0092	Plum Brook	40 29'46.410"N 74 55'40.768"W	11
AN0093	Plum Brook	40 27'49.932"N 74 58'04.041"W	11
AN0094	Wickecheoke Ck	40 26'38.138"N 74 57'57.999"W	11
AN0095	Wickecheoke Ck	40 24'41.329"N 74 59'11.194"W	11
AN0096	Alexauken Ck	40 22'49.353"N 74 54'10.197"W	11
AN0097	UNT to Alexauken Ck	40 24'22.175"N 74 55'10.615"W	11
AN0098	Alexauken Ck	40 22'50.158"N 74 56'52.659"W	11
AN0099	Swan Ck	40 21'50.273"N 74 56'42.853"W	11
AN0100	Moores Ck	40 20'39.621"N 74 53'08.715"W	11
AN0101	Moores Ck	40 19'26.394"N 74 55'01.395"W	11
AN0102	Jacobs Ck	40 20'29.374"N 74 50'18.357"W	11
AN0103	Airport Br of Jacobs Ck	40 17'24.047"N 74 50'26.702"W	11
AN0104	Woolseys Bk	40 18'27.419"N 74 49'35.358"W	11
AN0105	Jacobs Ck	40 18'25.937"N 74 50'01.804"W	11
AN0106	Jacobs Ck	40 16'42.298"N 74 51'12.939"W	11
AN0107	Gold Run	40 14'34.962"N 74 49'19.588"W	11
AN0108	Assunpink Ck	40 12'43.204"N 74 28'37.300"W	11
AN0109	Assunpink Ck	40 15'29.782"N 74 37'03.130"W	11
AN0109A	Assunpink Ck	40 13'06.002"N 74 33'37.024"W	11
AN0109B	New Sharon Br	40 12'59.755"N 74 33'38.479"W	11
AN0110	UNT to Shipetaukin Ck	40 19'11.335"N 74 43'30.882"W	11
AN0111	Shipetaukin Ck	40 17'46.003"N 74 42'17.453"W	11
AN0112	Little Shabakunk Ck	40 16'44.226"N 74 43'03.763"W	11
AN0113	Shabakunk Ck	40 17'06.648"N 74 45'59.203"W	11
AN0114	Shabakunk Ck	40 15'13.579"N 74 44'31.498"W	11
AN0115	Miry Run	40 14'49.546"N 74 41'13.758"W	11
AN0115A	Miry Run	40 14'04.950"N 74 37'35.147"W	11
AN0116	Assunpink Ck	40 14'08.450"N 74 44'19.749"W	11
AN0117	Pond Run	40 12'56.316"N 74 41'25.388"W	11
AN0118	Assunpink Ck	40 13'01.939"N 74 45'58.939"W	11

Appendix A — Station Numbers and Locations for the 1998 Upper Delaware Region AMNET Study

Site	Stream	Latitude Longitude	Watershed Management Area
AN0294	Lake Lookout Bk	41 11'31.864"N 74 24'58.251"W	2
AN0295	Wawayanda Ck	41 13'40.705"N 74 28'02.504"W	2
AN0296	Black Ck	41 13'22.080"N 74 28'32.078"W	2
AN0297	Wallkill R	41 02'20.323"N 74 37'48.469"W	2
AN0298	Wallkill R	41 05'12.932"N 74 35'41.539"W	2
AN0299	Wallkill R	41 08'00.210"N 74 34'43.645"W	2
AN0300	Wallkill R	41 09'09.255"N 74 34'54.492"W	2
AN0301	Beaver Run	41 10'49.311"N 74 35'33.715"W	2
AN0302	Wallkill R	41 11'38.230"N 74 34'30.320"W	2
AN0303	Papakating Ck	41 09'59.891"N 74 43'37.885"W	2
AN0304	Papakating Ck	41 09'45.418"N 74 40'31.047"W	2
AN0305	W Br Papakating Ck	41 13'05.916"N 74 40'16.315"W	2
AN0306	W Br Papakating Ck	41 11'49.793"N 74 37'53.861"W	2
AN0307	Papakating Ck	41 11'38.765"N 74 37'17.144"W	2
AN0308	UNT to Clove Bk	41 15'41.160"N 74 37'25.749"W	2
AN0309	Clove Bk	41 12'28.256"N 74 36'33.133"W	2
AN0309A	Clove Bk	41 15'43.069"N 74 37'48.196"W	2

APPENDIX B

Pictures and Site Locations of Morphological Abnormalities in
Larval Chironomidae and Amphipoda Recovered in the 1998
Upper Delaware AMNET Study

APPENDIX C

Graphical Comparison of Habitat Assessment Scores and New Jersey Impairment Scores from the 1998 Upper Delaware AMNET Study

APPENDIX D

Taxonomic and Statistical Data, NJIS Scores*, Habitat Assessment Scores and Observations from the 1998 Upper Delaware AMNET Study

* Statistical data includes those biometric results that are applied to the NJIS rating. We also include certain biometrics that are utilized in standard RBPII (and RBPIII) analyses [2], but not for the NJIS.

Not employed in the NJIS analysis are certain ratios of pollution-sensitive to pollution-tolerant types, or relative abundance of different feeding types. These can be indicative of environmental stress caused by organic enrichment and/or the presence of toxicants in the stream system:

1. *Scraper/Filtering Collector Ratio* — dominance of filtering collectors indicates organic enrichment; however, if toxicants are present in the system, their adsorption on macrophytes and fine particulate organics can affect the abundance of filtering collectors.
2. *Shredder/Total Ratio* — considering their diet of coarse particulate organic matter (CPOM), a lack of shredders may indicate the presence of toxicants, particularly from terrestrial sources (e.g. pesticides), as these are readily adsorbed to the CPOM.
3. *EPT/Chironomid Ratio* — even distribution among the major groups, with strong representation in the pollution-sensitive taxa, reflects a good biotic condition; dominance of chironomids reflects environmental stress.

Station: AN0001
Clove Bk, Off Rt 23, Montague Twp, Sussex County
Port Jervis S USGS Quadrangle
Date Sampled: 01/06/98

.	Family Tolerance Value (FTV)	Number of Individuals
Simulidae	6	66
Chironomidae	6	33
Leuctridae	0	3
Capniidae	1	1
Lepidostomatidae	1	1
Lumbriculidae	8	1
Nemouridae	2	1
Planariidae	4	1
Physidae	7	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 108
% Contribution of Dominant Family: 61.11 % (Simulidae)
Family Biotic Index: 5.71
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 5.56
EPT/C: 0.17
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 97
Deficiency(s) noted: Simulidae Family Overwhelmingly Dominant
Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 2/1
Substrate: Cobbles....StreamBank Vegetation/Stability: Grasses/Stable
Canopy: Mostly Open....Other: Forested/Lake upstream/picnic area/snow making operation nearby;
Water temp. 3.6 /pH 7.1 /DO 10.8 /Cond. 250

Station: AN0002
Clove Bk, Rt 23, Duttonville, Sussex County
Port Jervis S USGS Quadrangle
Date Sampled: 01/06/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	45
Taeniopterygidae	2	13
Ephemerellidae	1	7
Physidae	7	7
Enchytraeidae	10	3
Simulidae	6	3
Heptageniidae	4	3
Hydropsychidae	4	2
BloodRed Chironomidae	8	2
Tipulidae	3	2
Oligoneuriidae	2	2
Capniidae	1	1
Limnephilidae	4	1
Baetidae	4	1
Elmidiae	4	1
Planorbidae	6	1
Talitridae	8	1
Plagiostomidae	4	1
Naididae	7	1
Sphaeriidae	8	1
Tetrastemmatidae	7	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 100
% Contribution of Dominant Family: 45.00 % (Chironomidae)
Family Biotic Index: 5.05
Scraper/Filterer Collector Ratio: 0.75
Shredder/Total Ratio: 0.14
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 30.00
EPT/C: 0.64
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 140

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 17/2
Substrate: Cobbles, gravel....StreamBank Vegetation/Stability: Trees, shrubs/Stable
Canopy: Mostly Open....Other: Forested upstream/Commerical area; Water temp. 3.4 /pH 7.7
/DO 12.9 /Cond. 195

Station: AN0003
Shimers Bk, Rt 521 , Millville, Sussex County
Milford USGS Quadrangle
Date Sampled: 01/06/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	28
Lumbriculidae	8	18
Ephemerellidae	1	14
Sphaeriidae	8	10
Talitridae	8	5
Hydropsychidae	4	4
Perlidae	1	3
Limnephilidae	4	3
Heptageniidae	4	3
Corydalidae	0	2
Rhyacophilidae	0	2
Tipulidae	3	1
Dolichopodidae	4	1
Philopotamidae	3	1
Hydrophilidae	5	1
Gomphidae	1	1
Leuctridae	0	1
Lumbricidae	10	1
Elmidae	4	1
Polycentropodidae	6	1
Simulidae	6	1
Psephenidae	4	1
Ceratopogonidae	6	1

Statistical Analysis

Number of Taxa:	23
Total Number of Individuals:	104
% Contribution of Dominant Family:	26.92 % (Chironomidae)
Family Biotic Index:	5.20
Scraper/Filterer Collector Ratio:	1.29
Shredder/Total Ratio:	0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera):	9
% EPT:	30.77
EPT/C:	1.10
NJIS Rating:	24
Biological Condition:	Nonimpaired
Habitat Analysis:	167

Observations	

Streamwater:	Clear....Flow: Moderate....Width/Depth (ft): 13/2
Substrate:	Cobbles....StreamBank Vegetation/Stability: Trees/shrubs/Stable
Canopy:	Mostly Open....Other: Boulder reinforcement; Water temp. 4.5/pH 8.7/DO 12.5/Cond. 205

Station: AN0004
Little Flat Bk, Deckertown Tnpk { Rt 650 } Four Corners, Sussex County
Milford USGS Quadrangle
Date Sampled: 01/05/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	15
Chironomidae	6	15
Ephemerellidae	1	12
Limnephilidae	4	9
Siphlonuridae	7	7
Brachycentridae	1	7
Taeniopterygidae	2	6
Hydropsychidae	4	5
Leuctridae	0	4
Leptophlebiidae	2	4
Lepidostomatidae	1	4
Rhyacophilidae	0	2
Astacidae	7	1
Gomphidae	1	1
Chloroperlidae	1	1
Hydroptilidae	4	1
Perlodidae	2	1
Lumbriculidae	8	1
Psychomyiidae	2	1
Molannidae	6	1
Family	5	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 100
% Contribution of Dominant Family: 15.00 % (Simuliidae & Chironomidae)
Family Biotic Index: 3.69
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.25
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 15
% EPT: 65.00
EPT/C: 4.33
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 194

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 4/< 1
Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested; Water temp.3.7/pH 7.9 /DO 12.7 /Cond.62

Station: AN0005
Little Flat Bk, Degroat Rd , Hainesville, Sussex County
Milford USGS Quadrangle
Date Sampled: 01/05/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	34
Ephemerellidae	1	13
Chironomidae	6	11
Limnephilidae	4	7
Hydropsychidae	4	7
Sphaeriidae	8	6
Taeniopterygidae	2	4
Protoneuriidae	9	3
Tubificidae	10	2
Philopotamidae	3	2
Hydroptilidae	4	2
Psephenidae	4	2
Heptageniidae	4	2
Baetidae	4	1
Leptophlebiidae	2	1
Leptoceridae	4	1
Corydalidae	0	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 18

Total Number of Individuals: 100

% Contribution of Dominant Family: 34.00 % (Simuliidae)

Family Biotic Index: 4.85

Scraper/Filterer Collector Ratio: 0.27

Shredder/Total Ratio: 0.05

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 10

% EPT: 40.00

EPT/C: 3.64

NJIS Rating: 30

Biological Condition: Nonimpaired

Habitat Analysis: 162

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/<1

Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Weeds/Stable

Canopy: Mostly Open....Other: Forested,Agriculture,Livestock; Water temp.3.5/pH 7.5/DO 12.1/Cond.230

Station: AN0005A
Little Flat Bk, Rt 615 Sandyston Twp, Sussex County
Culvers Gap USGS Quadrangle
Date Sampled: 01/07/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	24
Ephemerellidae	1	15
Hydropsychidae	4	11
Nemouridae	2	10
Taeniopterygidae	2	8
Lumbriculidae	8	5
Helicopsychidae	3	4
Elmidae	4	4
Simuliidae	6	4
Philopotamidae	3	2
Heptageniidae	4	2
Limnephilidae	4	1
Planariidae	4	1
Hydroptilidae	4	1
Oligoneuriidae	2	1
Lumbricidae	10	1
Brachycentridae	1	1
Nematoda	6	1
Psephenidae	4	1
Odontoceridae	0	1
Rhyacophilidae	0	1
Ceratopogonidae	6	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 100
% Contribution of Dominant Family: 24.00 % (Chironomidae)
Family Biotic Index: 3.86
Scraper/Filterer Collector Ratio: 0.78
Shredder/Total Ratio: 0.19
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 13
% EPT: 58.00
EPT/C: 2.42
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 143

Observations

Streamwater: Slightly Turbid....Flow: Fast....Width/Depth (ft): 22/2
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Open....Other: Forested,Rural;

Station: AN0006
Big Flat Bk, Rt 560, Tuttles Corner, Sussex County
Clvers Gap USGS Quadrangle
Date Sampled: 01/05/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Ephemerellidae	1	30
Heptageniidae	4	12
Chironomidae	6	12
Hydropsychidae	4	10
Lumbriculidae	8	7
Leptophlebiidae	2	7
Hydroptilidae	4	6
Nemouridae	2	4
Taeniopterygidae	2	3
Limnephilidae	4	2
Planorbidae	6	2
Helicopsychidae	3	2
Athericidae	2	1
Glossosomatidae	0	1
Oligoneuriidae	2	1
Corydalidae	0	1
Elmidae	4	1
Physidae	7	1
Simulidae	6	1
Psephenidae	4	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 105
% Contribution of Dominant Family: 28.57 % (Ephemerellidae)
Family Biotic Index: 3.32
Scraper/Filterer Collector Ratio: 1.25
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 10
% EPT: 71.43
EPT/C: 5.95
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 170

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 40/2
Substrate: Cobbles, gravel, sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Open....Other: Forested, Rural; Water temp. 2.5/pH 8.7/DO 14.8/Cond. 51

Station: AN0007
Flat Bk, Rt 615 Walpack Center, Sussex County
Lk Maskenozha USGS Quadrangle
Date Sampled: 01/05/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	27
Ephemerallidae	1	10
Hydropsychidae	4	7
Lumbriculidae	8	7
Elmidae	4	6
Taeniopterygidae	2	5
Heptageniidae	4	5
Helicopsychidae	3	4
Planariidae	4	4
Limnephilidae	4	3
Brachycentridae	1	3
Leptoceridae	4	3
Nematoda	6	3
Capniidae	1	2
Rhyacophilidae	0	2
BloodRed Chironomidae	8	1
Planorbidae	6	1
Oligoneuriidae	2	1
Lepidostomatidae	1	1
Corydalidae	0	1
Sphaeriidae	8	1
Simulidae	6	1
Tetrastemmatidae	7	1
Lymnaeidae	6	1

Statistical Analysis

Number of Taxa: 24
Total Number of Individuals: 100
% Contribution of Dominant Family: 27.00 % (Chironomidae)
Family Biotic Index: 4.29
Scraper/Filterer Collector Ratio: 0.51
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12

% EPT: 46.00
EPT/C: 1.64
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 184

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 40/3
Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Open....Other: Forested/Rural; Water temp.3.0 /pH 7.0 /DO 13.3 /Cond.110

Station: AN0008
Flat Bk, Rt 615 Flatbrookville, Sussex County
Flatbrookville USGS Quadrangle
Date Sampled: 11/18/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Ephemerellidae	1	29
Hydropsychidae	4	24
Heptageniidae	4	18
Limnephilidae	4	12
Oligoneuriidae	2	7
Elmidae	4	4
Philopotamidae	3	2
Helicopsychidae	3	2
Lepidostomatidae	1	2
Polycentropodidae	6	2
Taeniopterygidae	2	2
Planorbidae	6	1
Hydroptilidae	4	1
Tubificidae	10	1
Corydalidae	0	1
Chironomidae	6	1
Rhyacophilidae	0	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 110
% Contribution of Dominant Family: 26.36 % (Ephemerellidae)
Family Biotic Index: 3.01
Scraper/Filterer Collector Ratio: 2.43
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 92.73
EPT/C: 92.73
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 177

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 35/2
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Open....Other: Forested; Water temp.1.3 /pH 8.8 /DO 13.7 /Cond. 206

Station: AN0009

Van Campens Bk, Flatbrookville-Middleville Rd , Walpack Twp, Sussex County
Flatbrookville USGS Quadrangle

Date Sampled: 11/18/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Taeniopterygidae	2	19
Leuctridae	0	16
Brachycentridae	1	12
Chironomidae	6	12
Hydropsychidae	4	10
Rhyacophilidae	0	9
Ephemerellidae	1	8
Naididae	7	4
Elmidae	4	4
Simulidae	6	3
Tipulidae	3	3
BloodRed Chironomidae	8	2
Lumbriculidae	8	1
Molannidae	6	1
Corydalidae	0	1
Limnephilidae	4	1
Sialidae	4	1
Heptageniidae	4	1
Philopotamidae	3	1

Statistical Analysis

Number of Taxa: 19

Total Number of Individuals: 109

% Contribution of Dominant Family: 17.43 % (Taeniopterygidae)

Family Biotic Index: 2.62

Scraper/Filterer Collector Ratio: 0.00

Shredder/Total Ratio: 0.47

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 10

% EPT: 71.56

EPT/C: 5.11

NJIS Rating: 30

Biological Condition: Nonimpaired

Habitat Analysis: 182

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 4/<1

Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs/Stable

Canopy: Mostly Closed....Other: Forested; Water temp.3.2 /pH 6.5 /DO 11.4 /Cond.33

Station: AN0010
Van Campens Bk, Mill Rd , Millbrook, Warren County
Flatbrookville USGS Quadrangle
Date Sampled: 11/13/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Heptageniidae	4	35
Leptophlebiidae	2	14
Brachycentridae	1	9
Perlidae	1	5
Philopotamidae	3	5
Rhyacophilidae	0	5
Taeniopterygidae	2	5
Hydropsychidae	4	4
Chironomidae	6	4
Tipulidae	3	2
Ephemerellidae	1	2
Leuctridae	0	2
Pteronarcidae	0	2
Peltoperlidae	1	2
Glossosomatidae	0	1
Chloroperlidae	1	1
Elmidae	4	1
Baetidae	4	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 35.00 % (Heptageniidae)
Family Biotic Index: 2.66
Scraper/Filterer Collector Ratio: 4.56
Shredder/Total Ratio: 0.20
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 15
% EPT: 93.00
EPT/C: 23.25
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 196

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 10/1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Open....Other: Forested; Water temp.4.0 /pH 7.3 /DO - /Cond.62

Station: AN0011
Van Campens Bk, Old Mine Rd , Pahaquarry Twp, Warren County
Bushkill USGS Quadrangle
Date Sampled: 11/18/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Heptageniidae	4	53
Ephemerellidae	1	17
Leptophlebiidae	2	7
Taeniopterygidae	2	4
Limnephilidae	4	3
Odontoceridae	0	3
Perlidae	1	2
Chloroperlidae	1	2
Elmidae	4	2
Tipulidae	3	1
Lepidostomatidae	1	1
Leuctridae	0	1
Lumbriculidae	8	1
Chironomidae	6	1
Rhyacophilidae	0	1
Hydropsychidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 53.00 % (Heptageniidae)
Family Biotic Index: 2.97
Scraper/Filterer Collector Ratio: 78.00
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 95.00
EPT/C: 95.00
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 183

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 13/1
Substrate: Cobbles....StreamBank Vegetation/Stability: Trees, shrubs/Stable
Canopy: Mostly Closed....Other: Forested; Water temp. 2.4 /pH 7.7 /DO 12.3 /Cond. 82

Station: AN0012
Dunfield Ck, River Rd,{ Off Rt 80 } Pahaquarry Twp, Warren County
Portland/Stroudsburg USGS Quadrangle
Date Sampled: 11/20/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Heptageniidae	4	37
Ephemerellidae	1	17
Hydropsychidae	4	11
Lumbriculidae	8	8
Capniidae	1	8
Perlidae	1	4
Tipulidae	3	2
Chloroperlidae	1	2
Philopotamidae	3	2
Psephenidae	4	1
Enchytraeidae	10	1
Leptophlebiidae	2	1
Gomphidae	1	1
Planariidae	4	1
Elmidae	4	1
Tetrastemmatidae	7	1
Rhyacophilidae	0	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 18

Total Number of Individuals: 100

% Contribution of Dominant Family: 37.00 % (Heptageniidae)

Family Biotic Index: 3.33

Scraper/Filterer Collector Ratio: 4.38

Shredder/Total Ratio: 0.09

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 10

% EPT: 84.00

EPT/C: 0.00

NJIS Rating: 30

Biological Condition: Nonimpaired

Habitat Analysis: 163

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 7/<1

Substrate: Cobbles....StreamBank Vegetation/Stability: Trees, shrubs/Stable

Canopy: Mostly Open....Other: Forested/Rt 80 upstream; Water temp. 3.2 /pH 6.3 /DO 13.3 /Cond. 36

Station: AN0013
Stony Bk, Rt I-80 (N Of Columbia), Knowlton Twp, Warren County
Portland USGS Quadrangle
Date Sampled: NOT SAMPLED

Limestone area, under extreme low flow conditions the stream goes subsurface

Station: AN0014
Paulins Kill Trib, Rt 623 ,W Of Sparta Junction, Sussex County
Newton E USGS Quadrangle
Date Sampled: 10/16/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	31
Hydropsychidae	4	29
Chironomidae	6	13
Elmidae	4	9
Tubificidae	10	3
Helicopsychidae	3	3
Ephemerellidae	1	2
Limnephilidae	4	2
Sphaeriidae	8	2
Simulidae	6	2
Brachycentridae	1	1
Nematoda	6	1
Physidae	7	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 100
% Contribution of Dominant Family: 31.00 % (Gammaridae)
Family Biotic Index: 4.49
Scraper/Filterer Collector Ratio: 0.36
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 38.00
EPT/C: 2.92
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 146

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 11/2
Substrate: Gravel....StreamBank Vegetation/Stability: Shrubs, small trees/Stable
Canopy: Mostly Open....Other: Forested/Rural; Water temp.11.7 /pH 7.9 /DO 5.6 /Cond.703

Station: AN0015
Paulins Kill, Rt 663, Warbasse, Sussex County
Newton E USGS Quadrangle
Date Sampled: 10/16/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Elmidae	4	27
Tubificidae	10	17
Gammaridae	4	9
Talitridae	8	8
Asellidae	8	6
Chironomidae	6	6
Planariidae	4	6
Hydrobiidae	8	6
Protoneuridae	9	4
BloodRed Chironomidae	8	3
Sphaeriidae	8	3
Simulidae	6	3
Hydropsychidae	4	1
Chydoridae	4	1
Pyralidae	5	1
Sialidae	4	1
Corixidae	9	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 103
% Contribution of Dominant Family: 26.21 % (Elmidae)
Family Biotic Index: 6.43
Scraper/Filterer Collector Ratio: 3.86
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.97
EPT/C: 0.11
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 141
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 17/2
Substrate: Gravel,silt....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Open....Other: Forested/Agricultural; Water temp.12.2 /pH 7.9 /DO 4.5 /Cond.653

Station: AN0016
Paulins Kill Trib, Lafayette Meadows Rd , Lafayette Twp, Sussex County
Newton E USGS Quadrangle
Date Sampled: 10/16/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	50
Sphaeriidae	8	11
Chironomidae	6	10
Elmidae	4	8
Tubificidae	10	5
Asellidae	8	4
Psephenidae	4	3
Hydropsychidae	4	2
BloodRed Chironomidae	8	2
Planorbidae	6	1
Lepidostomatidae	1	1
Ceratopogonidae	6	1
Limnephilidae	4	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 14

Total Number of Individuals: 100

% Contribution of Dominant Family: 50.00 % (Gammaridae)

Family Biotic Index: 5.21

Scraper/Filterer Collector Ratio: 0.50

Shredder/Total Ratio: 0.06

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3

% EPT: 4.00

EPT/C: 0.33

NJIS Rating: 15

Biological Condition: Moderately Impaired

Habitat Analysis: 147

Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 7/1

Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs/Stable

Canopy: Mostly Closed....Other: Forested/Agricultural; Water temp.11.4 /pH 7.8 /DO 6.8 /Cond.853

Station: AN0017
Culvers Ck, Rt 206, Frankford Twp, Sussex County
Culvers Gap USGS Quadrangle
Date Sampled: 10/14/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	53
Philopotamidae	3	14
Simuliidae	6	10
Gammaridae	4	5
Asellidae	8	4
Tetrastemmatidae	7	4
Elmidae	4	4
Heptageniidae	4	4
Chironomidae	6	3
Lumbriculidae	8	2
Planorbidae	6	1
Lumbricidae	10	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 106
% Contribution of Dominant Family: 50.00 % (Hydropsychidae)
Family Biotic Index: 4.57
Scraper/Filterer Collector Ratio: 0.12
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 66.98
EPT/C: 22.33
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 107

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 6/1
Substrate: Cobbles....StreamBank Vegetation/Stability: Weeds/Stable
Canopy: Open....Other: Forested/Suburban/Septic systems/Wetlands upstream; Water temp.14.6 /pH 6.9 /DO 6.7 /Cond.143

Station: AN0018
Culvers Ck, Long Bridge Rd , Frankford Twp, Sussex County
Culvers Gap USGS Quadrangle
Date Sampled: 10/14/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Plagiostomidae	4	19
Planorbidae	6	13
Protoneuriidae	9	9
BloodRed Chironomidae	8	8
Gammaridae	4	7
Dytiscidae	5	7
Paludicellidae	7	7
Chironomidae	6	5
Hydropsychidae	4	4
Gomphidae	1	2
Tubificidae	10	2
Psychodidae	10	2
Corydalidae	0	2
Physidae	7	2
Glossiphoniidae	8	1
Leptoceridae	4	1
Talitridae	8	1
Lumbricidae	10	1
Nematoda	6	1
Leptophlebiidae	2	1
Sphaeriidae	8	1
Tetrastemmatidae	7	1
Phryganeidae	4	1
Simulidae	6	1
Ceratopogonidae	6	1

Statistical Analysis

Number of Taxa: 25
Total Number of Individuals: 100
% Contribution of Dominant Family: 19.00 % (Plagiostomidae)
Family Biotic Index: 5.82
Scraper/Filterer Collector Ratio: 1.36
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 7.00
EPT/C: 0.54
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 105
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8/1
Substrate: Cobbles,gravel,mud....StreamBank Vegetation/Stability: Shrubs,trees/Unstable
Canopy: Mostly Closed....Other: Forested/Rural; Water temp.14.6 /pH 7.0 /DO 1.9 /Cond.370

Station: AN0019
Dry Bk, Rt 519 , Frankford Twp, Sussex County
Branchville USGS Quadrangle
Date Sampled: 10/14/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	17
Chironomidae	6	16
Elmidae	4	12
Tubificidae	10	11
Naididae	7	8
Psychodidae	10	5
Baetidae	4	4
Planorbidae	6	4
Hydridae	5	4
Protoneuriidae	9	3
Daphnidae	4	3
Gomphidae	1	2
Tabanidae	6	2
Calopterygidae	5	1
Caenidae	7	1
Planariidae	4	1
Chydoridae	4	1
Leptophlebiidae	2	1
Physidae	7	1
Tetrastemmatidae	7	1
Ephemerellidae	1	1
Simulidae	6	1

Statistical Analysis

Number of Taxa: 22

Total Number of Individuals: 100

% Contribution of Dominant Family: 17.00 % (Sphaeriidae)

Family Biotic Index: 6.52

Scraper/Filterer Collector Ratio: 0.89

Shredder/Total Ratio: 0.00

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4

% EPT: 7.00

EPT/C: 0.44

NJIS Rating: 18

Biological Condition: Moderately Impaired

Habitat Analysis: 118

Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8/1

Substrate: Cobbles,gravel,silt....StreamBank Vegetation/Stability: Trees/Stable

Canopy: Mostly Open....Other: Forested/Agricultural/Rural; Water temp.13.8 /pH 7.6 /DO 5.1 /Cond.275

Station: AN0020
Dry Bk, Mill Rd, Branchville, Sussex County
Branchville USGS Quadrangle
Date Sampled: NOT SAMPLED

No Water

Limestone area, under extreme low flow conditions the stream goes subsurface

Station: AN0021
Paulins Kill, Rt 626 , Balesville, Sussex County
Newton W USGS Quadrangle
Date Sampled: 10/09/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	24
Hydropsychidae	4	23
Baetidae	4	11
Ephemerellidae	1	7
Gammaridae	4	5
Elmidae	4	5
Philopotamidae	3	4
Planariidae	4	4
Simulidae	6	3
Planorbidae	6	2
Hydroptilidae	4	2
Nematoda	6	2
Protoneuriidae	9	1
Oligoneuriidae	2	1
Naididae	7	1
Physidae	7	1
Psephenidae	4	1
Veliidae	9	1
Lymnaeidae	6	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa:	20
Total Number of Individuals:	100
% Contribution of Dominant Family:	24.00 % (Chironomidae)
Family Biotic Index:	4.53
Scraper/Filterer Collector Ratio:	0.71
Shredder/Total Ratio:	0.24
E+P+T (Ephemeroptera, Plecoptera, Trichoptera):	7
% EPT:	49.00
EPT/C:	2.04
NJIS Rating:	30
Biological Condition:	Nonimpaired
Habitat Analysis:	171

Observations	

Streamwater:	Clear....Flow: Moderate....Width/Depth (ft): 30/1
Substrate:	Cobbles,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy:	Mostly Open....Other: Forested/Rural; Water temp.17.2 /pH 8.6 /DO 11.6 /Cond.508

Station: AN0022

Paulins Kill, Rt 614 , Blw Paulins Kill Lk , Stillwater Twp, Sussex County

Newton W USGS Quadrangle

Date Sampled: 10/09/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Paludicellidae	7	39
Hydropsychidae	4	14
Gammaridae	4	12
Simulidae	6	11
Planariidae	4	6
BloodRed Chironomidae	8	6
Chironomidae	6	3
Philopotamidae	3	2
Pyralidae	5	2
Planorbidae	6	1
Glossiphoniidae	8	1
Hydridae	5	1
Plagiostomidae	4	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 14

Total Number of Individuals: 100

% Contribution of Dominant Family: 39.00 % (Paludicellidae)

Family Biotic Index: 5.80

Scraper/Filterer Collector Ratio: 0.00

Shredder/Total Ratio: 0.08

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2

% EPT: 16.00

EPT/C: 1.78

NJIS Rating: 18

Biological Condition: Moderately Impaired

Habitat Analysis: 168

Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 40/<1

Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Grasses/Stable

Canopy: Open....Other: Forested/Rural; Water temp.18.1 /pH 9.3 /DO 10.8 /Cond.485

Station: AN0023
Troy Bk, Blw Swartswood Lk, Stillwater Twp, Sussex County
Newton W USGS Quadrangle
Date Sampled: NOT SAMPLED

NO WATER

Limestone area, under extreme low flow conditions and high lake evaporation the stream does not flow below Swartswood Lake dam.

Station: AN0023A
Troy Bk, Swartswood Rd , Stillwater Twp, Sussex County
Newton W USGS Quadrangle
Date Sampled: 10/09/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	25
Simulidae	6	8
Philopotamidae	3	5
Tetrastemmatidae	7	5
Sphaeriidae	8	5
Chironomidae	6	4
Planorbidae	6	4
Taeniopterygidae	2	4
Perlidae	1	3
Glossosomatidae	0	3
Limnephilidae	4	2
Helicopsychidae	3	2
Calopterygidae	5	2
Physidae	7	2
Elmidae	4	2
Baetidae	4	2
Aeshnidae	3	1
Ephemerellidae	1	1
Gammaridae	4	1
Lumbricidae	10	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 82
% Contribution of Dominant Family: 30.49 % (Hydropsychidae)
Family Biotic Index: 4.50
Scraper/Filterer Collector Ratio: 0.37
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 57.32
EPT/C: 14.33
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 186

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/1
Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested/Rural; Water temp.14.8 /pH 8.3 /DO 9.3 /Cond.162

Station: AN0024
Trout Bk, Pond Brook Rd {Rt 612 } Middleville, Sussex County
Newton W USGS Quadrangle
Date Sampled: 10/07/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Helicopsychidae	3	18
Ephemerellidae	1	14
Psephenidae	4	10
Hydropsychidae	4	9
Leptophlebiidae	2	8
Sphaeriidae	8	6
Heptageniidae	4	5
Chironomidae	6	5
Baetidae	4	4
Perlidae	1	3
Lumbriculidae	8	3
Elmidae	4	3
Philopotamidae	3	2
Rhyacophilidae	0	2
BloodRed Chironomidae	8	2
Planariidae	4	1
Tipulidae	3	1
Lepidostomatidae	1	1
Leptoceridae	4	1
Ceratopogonidae	6	1
Pteronarcidae	0	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 100
% Contribution of Dominant Family: 18.00 % (Helicopsychidae)
Family Biotic Index: 3.53
Scraper/Filterer Collector Ratio: 1.82
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 68.00
EPT/C: 9.71
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 140

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 5/<1
Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Rural/Agricultural livestock; Water temp.15.9 /pH 7.9 /DO 8.7 /Cond.150

Station: AN0025
Paulins Kill, Sunset Hill Rd , Blairstown, Warren County
Blairstown USGS Quadrangle
Date Sampled: 11/13/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Caenidae	7	21
Sphaeriidae	8	12
Elmidae	4	9
Ephemerellidae	1	8
Gammaridae	4	8
Hydropsychidae	4	7
Hydrobiidae	8	7
Brachycentridae	1	5
Simulidae	6	5
Planorbidae	6	3
Limnephilidae	4	2
Chironomidae	6	2
Heptageniidae	4	2
Taeniopterygidae	2	2
Protoneuridae	9	1
Lebertiidae	4	1
Lumbriculidae	8	1
Leptoceridae	4	1
Nematoda	6	1
Psephenidae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 100
% Contribution of Dominant Family: 21.00 % (Caenidae)
Family Biotic Index: 5.27
Scraper/Filterer Collector Ratio: 1.04
Shredder/Total Ratio: 0.09
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 48.00
EPT/C: 24.00
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 144

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 80/2
Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Open....Other: Suburban; Water temp.4.8 /pH 8.4 /DO - /Cond.480

Station: AN0025A
Blair Ck, Blw Fairview Lk, Hardwick Twp, Sussex County
Flatbrookville USGS Quadrangle
Date Sampled: NOT SAMPLED

ECOREGION DATA ONLY

Private property

Station: AN0026
Blair Ck, Shannon Rd , Hardwick Twp, Warren County
Flatbrookville USGS Quadrangle
Date Sampled: 10/07/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	39
Hydropsychidae	4	24
Planariidae	4	10
Tetrastemmatidae	7	4
Philopotamidae	3	3
Polycentropodidae	6	3
Tipulidae	3	3
Brachycentridae	1	2
Veliidae	9	2
Nematoda	6	2
Elmidae	4	2
Protoneuridae	9	1
Gyrinidae	3	1
Gomphidae	1	1
Ephemereellidae	1	1
Hydroptilidae	4	1
Oligoneuriidae	2	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 39.00 % (Chironomidae)
Family Biotic Index: 4.94
Scraper/Filterer Collector Ratio: 0.13
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 35.00
EPT/C: 0.90
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 98

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8/<1
Substrate: Cobbles,gravel,silt....StreamBank Vegetation/Stability: Shrubs/Stable
Canopy: Open....Other: Forested/Agricultural; Water temp.17.2 /pH - /DO 7.9 /Cond.101

Station: AN0027
Blair Ck, Rt 94 , Blairstown, Warren County
Blairstown USGS Quadrangle
Date Sampled: 11/13/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Ephemerellidae	1	19
Chironomidae	6	16
Elmidae	4	13
Limnephilidae	4	10
Gammaridae	4	9
Psephenidae	4	9
Philopotamidae	3	3
Helicopsychidae	3	3
Tetrastemmatidae	7	3
Hydropsychidae	4	2
Lepidostomatidae	1	2
Naididae	7	2
Taeniopterygidae	2	2
Protoneuridae	9	1
Caenidae	7	1
Brachycentridae	1	1
Leptophlebiidae	2	1
Sphaeriidae	8	1
Heptageniidae	4	1
Tricorythidae	4	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 19.00 % (Ephemerellidae)
Family Biotic Index: 3.81
Scraper/Filterer Collector Ratio: 9.17
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 46.00
EPT/C: 2.88
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 87

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Open....Other: Urban; Water temp.6.7 /pH 8.6 /DO - /Cond.290

Station: AN0028

Jacksonburg Ck, Rt 602 , Hardwick Twp, Warren County

Flatbrookville USGS Quadrangle

Date Sampled: 11/13/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Taeniopterygidae	2	13
Chironomidae	6	12
Leptophlebiidae	2	10
Sphaeriidae	8	9
Brachycentridae	1	7
Tubificidae	10	6
Hydropsychidae	4	5
Sialidae	4	5
Elmidiae	4	4
Protoneuriidae	9	3
Aeshnidae	3	3
Polycentropodidae	6	3
Philopotamidae	3	2
Ephemerellidae	1	2
BloodRed Chironomidae	8	2
Odontoceridae	0	2
Rhyacophilidae	0	2
Heptageniidae	4	2
Perlidae	1	1
Calopterygidae	5	1
Cordulegastridae	3	1
Planariidae	4	1
Oligoneuriidae	2	1
Lumbricidae	10	1
Molannidae	6	1
Pteronarcidae	0	1

Statistical Analysis

Number of Taxa: 26

Total Number of Individuals: 100

% Contribution of Dominant Family: 13.00 % (Taeniopterygidae)

Family Biotic Index: 4.30

Scraper/Filterer Collector Ratio: 0.55

Shredder/Total Ratio: 0.21

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 14

% EPT: 52.00

EPT/C: 3.71

NJIS Rating: 30

Biological Condition: Nonimpaired

Habitat Analysis: 182

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1

Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Stable

Canopy: Mostly Open....Other: Forested/Suburban; Water temp.4.7 /pH 6.7 /DO - /Cond.57

Station: AN0029
Jacksonburg Ck, Rt 94 , Jacksonburg, Warren County
Blairstown USGS Quadrangle
Date Sampled: 11/13/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Ephemerellidae	1	29
Heptageniidae	4	17
Limnephilidae	4	12
Hydropsychidae	4	12
Lumbricidae	10	7
Oligoneuriidae	2	4
Leptophlebiidae	2	4
Chironomidae	6	3
Psephenidae	4	3
Taeniopterygidae	2	3
Gammaridae	4	1
Lepidostomatidae	1	1
Leuctridae	0	1
Leptoceridae	4	1
Psychomyiidae	2	1
Sperchonidae	2	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Ephemerellidae)
Family Biotic Index: 3.28
Scraper/Filterer Collector Ratio: 3.81
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 85.00
EPT/C: 28.33

NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 146

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Unstable
Canopy: Mostly Open....Other: Urban; Water temp.5.0 /pH 8.1 /DO - /Cond.144

Station: AN0030
Yards Ck, Mt Vernon Rd , Mt Vernon, Warren County
Portland USGS Quadrangle
Date Sampled: 11/06/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	23
Sphaeriidae	8	21
Talitridae	8	13
Hydroptilidae	4	9
Asellidae	8	6
Physidae	7	6
Tubificidae	10	5
Hydropsychidae	4	4
Planorbidae	6	4
Caenidae	7	3
Protoneuridae	9	3
BloodRed Chironomidae	8	2
Libellulidae	9	2
Simulidae	6	2
Naididae	7	1
Elmidae	4	1
Hydrobiidae	8	1
Pyralidae	5	1
Tipulidae	3	1
Phryganeidae	4	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 110
% Contribution of Dominant Family: 20.91 % (Chironomidae)
Family Biotic Index: 6.86
Scraper/Filterer Collector Ratio: 0.52
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 16.36
EPT/C: 0.65
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 95

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10/1
Substrate: Mud,silt....StreamBank Vegetation/Stability: Shrubs/Stable
Canopy: Open....Other: Forested/Rural/Reservoir upstream; Water temp.10.5 /pH 6.7 /DO - /Cond.66

Station: AN0031
Yards Ck, Rt 94 , Hainesburg, Warren County
Portland USGS Quadrangle
Date Sampled: 11/06/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	17
Elmidae	4	17
Ephemerellidae	1	15
Philopotamidae	3	8
Limnephilidae	4	7
Chironomidae	6	6
Tubificidae	10	5
Helicopsychidae	3	4
Taeniopterygidae	2	3
Corixidae	9	2
Perlidae	1	2
Polycentropodidae	6	2
Rhyacophilidae	0	2
Calopterygidae	5	1
Tipulidae	3	1
Asellidae	8	1
Planariidae	4	1
Empididae	6	1
Curculionidae	7	1
Lumbricidae	10	1
Ceratopogonidae	6	1
Psephenidae	4	1
Simulidae	6	1

Statistical Analysis

Number of Taxa: 23
Total Number of Individuals: 100
% Contribution of Dominant Family: 17.00 % (Hydropsychidae & Elmidae)
Family Biotic Index: 3.98
Scraper/Filterer Collector Ratio: 1.29
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 60.00
EPT/C: 10.00
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 142

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Grasses/Stable
Canopy: Open....Other: Forested/Rural/Agricultural livestock; Water temp.7.5 /pH 8.1 /DO - /Cond.134

Station: AN0032
Paulins Kill, Rt 46 , Columbia, Warren County
Portland USGS Quadrangle
Date Sampled: 11/06/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Spongillidae	5	65
Fredericellidae	2	14
Taeniopterygidae	2	5
Gammaridae	4	4
Ephemerellidae	1	3
Hydropsychidae	4	2
Elmidae	4	2
Physidae	7	2
Planariidae	4	1
Chironomidae	6	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 100
% Contribution of Dominant Family: 65.00 % (Spongillidae)
Family Biotic Index: 4.26
Scraper/Filterer Collector Ratio: 1.50
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 11.00
EPT/C: 11.00
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 185
Deficiency(s) noted: Spongillidae Family Overwhelmingly Dominant

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 30/2
Substrate: Cobbles....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Open....Other: Rural; Water temp. 9.6 /pH 8.6 /DO -- /Cond. 494

Station: AN0032A
Paulins Kill, Vail Rd , Vail, Warren County
Portland USGS Quadrangle
Date Sampled: 11/06/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydrobiidae	8	15
Helicopsychidae	3	12
Elmidae	4	12
Hydropsychidae	4	11
Limnephilidae	4	8
Lepidostomatidae	1	8
Gammaridae	4	6
Ephemerellidae	1	5
Psephenidae	4	4
Protoneuriidae	9	3
Sphaeriidae	8	3
Planariidae	4	2
Heptageniidae	4	2
Taeniopterygidae	2	2
Empididae	6	1
Brachycentridae	1	1
Chironomidae	6	1
Nematoda	6	1
Pyralidae	5	1
Pleuroceridae	6	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 100
% Contribution of Dominant Family: 15.00 % (Hydrobiidae)
Family Biotic Index: 4.38
Scraper/Filterer Collector Ratio: 2.79
Shredder/Total Ratio: 0.12
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 49.00
EPT/C: 49.00
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 155

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 100/4
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Open....Other: Forested/Rural/Agricultural livestock; Water temp.8.8 /pH 8.1 /DO - /Cond.453

Station: AN0033
Delawanna Ck, Rt 46 , Delaware, Warren County
Portland USGS Quadrangle
Date Sampled: 11/06/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Ephemerellidae	1	40
Heptageniidae	4	18
Philopotamidae	3	8
Leuctridae	0	6
Asellidae	8	4
Elmidae	4	4
Spongillidae	5	3
Lumbricidae	10	3
Limnephilidae	4	2
Hydropsychidae	4	2
Planariidae	4	2
Gammaridae	4	2
Psephenidae	4	2
Gyrinidae	3	1
Chironomidae	6	1
Rhyacophilidae	0	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 40.00 % (Ephemerellidae)
Family Biotic Index: 2.80
Scraper/Filterer Collector Ratio: 6.60
Shredder/Total Ratio: 0.11
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 78.00
EPT/C: 78.00
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 155

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Open....Other: Forested/Rural/Large parking area and gas station adjacent;
Water temp.8.3 /pH 8.6 /DO - /Cond.404

Station: AN0034

Ramseysburg Ck, Rt 46, Ramseysburg, Warren County

Portland USGS Quadrangle

Date Sampled: NOT SAMPLED

NO WATER

Limestone area, under extreme low flow conditions the stream goes underground

Station: AN0035
Pequest R, Rt 206 , Springdale, Sussex County
Newton W USGS Quadrangle
Date Sampled: 09/25/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Protoneuridae	9	53
Chironomidae	6	10
Tubificidae	10	6
Planorbidae	6	5
Planariidae	4	4
Physidae	7	4
Elmidae	4	3
BloodRed Chironomidae	8	2
Naididae	7	2
Aeshnidae	3	1
Caenidae	7	1
Gammaridae	4	1
Hydropsychidae	4	1
Baetidae	4	1
Tetrastemmatidae	7	1
Psephenidae	4	1
Lymnaeidae	6	1
Phryganeidae	4	1
Simulidae	6	1
Ceratopogonidae	6	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 53.00 % (Protoneuridae)
Family Biotic Index: 7.68
Scraper/Filterer Collector Ratio: 4.50
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 4.00
EPT/C: 0.33
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 127
Deficiency(s) noted: Significant Organic Pollution
Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/1
Substrate: Cobbles,gravel,mud,silt....StreamBank Vegetation/Stability: Weeds/Unstable
Canopy: Mostly Open....Other: Forested/Rural/Agricultural; Water temp.10.9 /pH 9.0 /DO 8.0 /Cond.549

Station: AN0036
Pequest R Trib, Brighton Rd , Brighton, Sussex County
Tranquility USGS Quadrangle
Date Sampled: 09/25/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	69
Physidae	7	9
Hydrobiidae	8	8
Elmidae	4	5
Corixidae	9	4
Blood Red Chironomidae	8	1
Helicopsychidae	3	1
Protoneuriidae	9	1
Tubificidae	10	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 10

Total Number of Individuals: 100

% Contribution of Dominant Family: 69.00 % (Gammaridae)

Family Biotic Index: 4.97

Scraper/Filterer Collector Ratio: 6.00

Shredder/Total Ratio: 0.00

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1

% EPT: 1.00

EPT/C: 1.00

NJIS Rating: 9

Biological Condition: Moderately Impaired

Habitat Analysis: 126

Deficiency(s) noted: Gammaridae Family Overwhelmingly Dominant
Paucity of Clean Water Organisms

Observations

Streamwater: Slightly turbid....Flow: Slow....Width/Depth (ft): 25/4

Substrate: Cobbles,gravel,silt....StreamBank Vegetation/Stability: Trees/Stable

Canopy: Mostly Open....Other: Forested /Rural; Water temp.11.6 /pH 8.1 /DO 7.5 /Cond.522

Station: AN0037
Pequest R, Pequest Rd, Huntsville, Sussex County
Tranquility USGS Quadrangle
Date Sampled: 09/23/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Elmidae	4	25
Hydropsychidae	4	13
Psephenidae	4	12
Simuliidae	6	10
Heptageniidae	4	7
Planariidae	4	6
Ephemerellidae	1	6
Gammaridae	4	4
Baetidae	4	3
Philopotamidae	3	3
Corydalidae	0	3
Chironomidae	6	2
Brachycentridae	1	2
Perlidae	1	2
Hydrobiidae	8	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 25.00 % (Elmidae)
Family Biotic Index: 3.82
Scraper/Filterer Collector Ratio: 1.69
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 36.00
EPT/C: 18.00
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 164

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 25/1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Urban/Agricultural; Water temp.13.8 /pH 8.3 /DO 9.7 /Cond.558

Station: AN0038
Trout Bk, Rt 612 , Allamuchy, Warren County
Tranquility USGS Quadrangle
Date Sampled: 12/18/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	44
Limnephilidae	4	26
Ephemerellidae	1	16
Gammaridae	4	14
Elmidae	4	5
Sphaeriidae	8	2
Taeniopterygidae	2	1
Nematoda	6	1
Ceratopogonidae	6	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 110
% Contribution of Dominant Family: 40.00 % (Chironomidae)
Family Biotic Index: 4.45
Scraper/Filterer Collector Ratio: 2.50
Shredder/Total Ratio: 0.24
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 39.09
EPT/C: 0.89
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 144

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 13/2
Substrate: Mud,silt....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested/Agricultural; Water temp.5.3 /pH 8.6 /DO 11.8 /Cond.570

Station: AN0039
Pequest R, Rt 615 , Long Bridge, Warren County
Tranquility USGS Quadrangle
Date Sampled: 09/18/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	38
Elmidae	4	15
Corixidae	9	12
Chironomidae	6	10
Heptageniidae	4	7
Gammaridae	4	6
BloodRed Chironomidae	8	4
Tipulidae	3	2
Philopotamidae	3	2
Fredericellidae	2	2
Baetidae	4	2
Corydalidae	0	1
Perlidae	1	1
Tabanidae	6	1
Gerridae	8	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 104
% Contribution of Dominant Family: 36.54 % (Hydropsychidae)
Family Biotic Index: 4.84
Scraper/Filterer Collector Ratio: 0.55
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 48.08
EPT/C: 3.43
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 149

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 19/2
Substrate: Cobbles,gravel,sand,snags....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Open....Other: Forested/Rural/Agricultural; Water temp.18.8 /pH 8.1 /DO 9.2 /Cond.532

Station: AN0040
Bear Ck, Shades Of Death Rd , {Nr Alphano } Independence Twp, Warren County
Blairstown USGS Quadrangle
Date Sampled: 09/23/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	56
Elmidae	4	8
Hydropsychidae	4	7
Physidae	7	7
Chironomidae	6	4
Baetidae	4	4
Planariidae	4	3
Hydrobiidae	8	2
Sphaeriidae	8	2
Corixidae	9	2
Asellidae	8	1
Tubificidae	10	1
Philopotamidae	3	1
Empididae	6	1
Psephenidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 56.00 % (Gammaridae)
Family Biotic Index: 4.66
Scraper/Filterer Collector Ratio: 0.93
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 12.00
EPT/C: 3.00
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 155

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 13/1
Substrate: Cobbls,mud,silt....StreamBank Vegetation/Stability: Shrubs,grasses/Stable
Canopy: Mostly Open....Other: Forested/Rural/Agricultural/Beaver dam upstream; Water temp.12.6 /pH 8.5 /DO 8.3 /Cond.500

Station: AN0040A
Bear Ck, Dark Moon Rd , Frelinghuysen Twp, Warren County
Tranquility USGS Quadrangle
Date Sampled: 09/23/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	71
Elmidae	4	12
Ephemerellidae	1	5
Hydropsychidae	4	2
Limnephilidae	4	2
Astacidae	7	1
Planariidae	4	1
Lumbricidae	10	1
Baetidae	4	1
Dendrocoelidae	4	1
Sialidae	4	1
Simulidae	6	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 71.00 % (Gammaridae)
Family Biotic Index: 3.98
Scraper/Filterer Collector Ratio: 5.67
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 10.00
EPT/C: 0.00
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 162
Deficiency(s) noted: Gammaridae Family Overwhelmingly Dominant

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 4/<1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Grasses,shrubs/Stable
Canopy: Mostly Open....Other: Rural/Agriculture cropland and livestock; Water temp.13.3
/pH 8.4 /DO 9.8 /Cond.510

Station: AN0041
Pequest R, Cemetery Rd, Vienna, Warren County
Washington USGS Quadrangle
Date Sampled: 09/18/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	30
Gammaridae	4	12
Chironomidae	6	11
Corixidae	9	10
Elmidae	4	9
Heptageniidae	4	9
Veliidae	9	4
Tipulidae	3	3
Brachycentridae	1	2
Baetidae	4	2
Asellidae	8	1
Gomphidae	1	1
Lepidostomatidae	1	1
Perlidae	1	1
BloodRed Chironomidae	8	1
Sphaeriidae	8	1
Psephenidae	4	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 18

Total Number of Individuals: 100

% Contribution of Dominant Family: 30.00 % (Hydropsychidae)

Family Biotic Index: 4.86

Scraper/Filterer Collector Ratio: 0.67

Shredder/Total Ratio: 0.14

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7

% EPT: 46.00

EPT/C: 3.83

NJIS Rating: 30

Biological Condition: Nonimpaired

Habitat Analysis: 156

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 33/2

Substrate: Cobbles,gravel,snags....StreamBank Vegetation/Stability: Trees/Stable

Canopy: Mostly Closed....Other: Forested/Rural/Agricultural; Water temp.18.8 /pH 8.1 /DO 8.7 /Cond.515

Station: AN0042
Furnace Bk, Pequest Rd , Oxford, Warren County
Washington USGS Quadrangle
Date Sampled: 10/02/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	32
Elmidae	4	16
Asellidae	8	10
Corixidae	9	9
Chironomidae	6	7
Planorbidae	6	6
Protoneuriidae	9	6
Gammaridae	4	3
Caenidae	7	2
BloodRed Chironomidae	8	2
Planariidae	4	1
Helicopsychidae	3	1
Talitridae	8	1
Naididae	7	1
Gomphidae	1	1
Sphaeriidae	8	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 32.00 % (Hydropsychidae)
Family Biotic Index: 5.68
Scraper/Filterer Collector Ratio: 0.70
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 35.00
EPT/C: 3.89
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 98

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 9/1
Substrate: Cobbles,gravel,silt....StreamBank Vegetation/Stability: Shrubs/Stable
Canopy: Open....Other: Forested/Rural/Channelized in past; Water temp.11.4 /pH 7.6 /DO 8.8 /Cond.223

Station: AN0043
Pequest R, Pequest Rd, Pequest, Warren County
Washington USGS Quadrangle
Date Sampled: 10/07/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	38
Ephemerallidae	1	14
Gammaridae	4	13
Tipulidae	3	7
Elmidiae	4	7
Heptageniidae	4	5
Baetidae	4	4
Rhyacophilidae	0	4
Lumbriculidae	8	3
Hydropsychidae	4	3
Nematoda	6	2
Asellidae	8	1
Brachycentridae	1	1
Naididae	7	1
Tetrastemmatidae	7	1
Psephenidae	4	1
Odontoceridae	0	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 18

Total Number of Individuals: 107

% Contribution of Dominant Family: 35.51 % (Chironomidae)

Family Biotic Index: 4.28

Scraper/Filterer Collector Ratio: 9.33

Shredder/Total Ratio: 0.02

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8

% EPT: 30.84

EPT/C: 0.81

NJIS Rating: 27

Biological Condition: Nonimpaired

Habitat Analysis: 148

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 30/1

Substrate: Gravel,silt....StreamBank Vegetation/Stability: Trees/Stable

Canopy: Mostly Open....Other: Forested/Rural; Water temp.13.7 /pH 8.9 /DO 9.8 /Cond.471

Station: AN0044
Mountain Lake Bk, Tamarack Rd , {Blw Mt. Lk } Liberty Twp, Warren County
Washington USGS Quadrangle
Date Sampled: 10/07/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Protoneuridae	9	39
BloodRed Chironomidae	8	14
Caenidae	7	11
Gammaridae	4	9
Paludicellidae	7	8
Chironomidae	6	5
Planorbidae	6	3
Asellidae	8	2
Gomphidae	1	2
Chydoridae	4	2
Hydrobiidae	8	2
Spongillidae	5	2
Tetrastemmatidae	7	2
Elmidae	4	2
Gerridae	8	1
Nepidae	8	1

Statistical Analysis

Number of Taxa: 16

Total Number of Individuals: 105

% Contribution of Dominant Family: 37.14 % (Protoneuridae)

Family Biotic Index: 7.33

Scraper/Filterer Collector Ratio: 0.24

Shredder/Total Ratio: 0.15

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1

% EPT: 10.48

EPT/C: 0.55

NJIS Rating: 15

Biological Condition: Moderately Impaired

Habitat Analysis: 146

Deficiency(s) noted: Significant Organic Pollution
Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 20/2

Substrate: Cobbles,silt....StreamBank Vegetation/Stability: Trees/Stable

Canopy: Mostly Closed....Other: Forested/Rural/Lake upstream; Water temp.18.2 /pH 8.1 /DO 4.7 /Cond.253

Station: AN0045
Beaver Bk, Ridgeway Ave , Hope Twp, Warren County
Blairstown USGS Quadrangle
Date Sampled: 09/16/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	19
Psephenidae	4	18
Gomphidae	1	9
Leptophlebiidae	2	8
Elmidae	4	8
Heptageniidae	4	7
Odontoceridae	0	6
Hydropsychidae	4	4
Ephemerellidae	1	3
Corydalidae	0	3
Asellidae	8	2
Leptoceridae	4	2
Limnephilidae	4	2
Perlidae	1	1
Philopotamidae	3	1
Gammaridae	4	1
Empididae	6	1
Lumbricidae	10	1
BloodRed Chironomidae	8	1
Polycentropodidae	6	1
Tetrastemmatidae	7	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 100
% Contribution of Dominant Family: 19.00 % (Chironomidae)
Family Biotic Index: 3.71
Scraper/Filterer Collector Ratio: 2.44
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 36.00
EPT/C: 1.80
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 113

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8/1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested/Rural; Water temp.18.9 /pH 7.8 /DO 5.7 /Cond.293

Station: AN0046
Honey Run, Rt 519 , Hope Twp, Warren County
Blairstown USGS Quadrangle
Date Sampled: 09/16/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Elmidae	4	26
Chironomidae	6	24
Hydropsychidae	4	13
Gammaridae	4	7
Fredericellidae	2	5
Philopotamidae	3	3
Tubificidae	10	3
Limnephilidae	4	3
Hydrobiidae	8	2
Psephenidae	4	2
Tipulidae	3	1
Asellidae	8	1
Aeshnidae	3	1
Planariidae	4	1
Dryopidae	5	1
Helicopsychidae	3	1
Hydridae	5	1
Protoneuridae	9	1
Veliidae	9	1
Heptageniidae	4	1
Tabanidae	6	1
Valvatidae	4	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 100
% Contribution of Dominant Family: 26.00 % (Elmidae)
Family Biotic Index: 4.76
Scraper/Filterer Collector Ratio: 0.80
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 21.00
EPT/C: 0.88
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 133

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Weeds/Stable
Canopy: Mostly Open....Other: Rural/Agricultural cropland and livestock; Water temp.17.2
/pH 7.8 /DO 6.9 /Cond.374

Station: AN0047
Beaver Bk, Sarepta Rd , Sarepta, Warren County
Belvidere USGS Quadrangle
Date Sampled: 10/02/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	15
Ephemerellidae	1	15
Helicopsychidae	3	15
Gammaridae	4	13
Chironomidae	6	5
Tipulidae	3	4
Brachycentridae	1	4
Elmidae	4	4
Odontoceridae	0	4
Asellidae	8	3
Heptageniidae	4	3
Perlidae	1	2
Planariidae	4	2
Psephenidae	4	2
Caenidae	7	1
Hydrobiidae	8	1
Oligoneuriidae	2	1
Lepidostomatidae	1	1
Tubificidae	10	1
Baetidae	4	1
Limnephilidae	4	1
Sialidae	4	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 23
Total Number of Individuals: 100
% Contribution of Dominant Family: 15.00 % (Hydropsychidae & Ephemerellidae & Helicopsychidae)
Family Biotic Index: 3.36
Scraper/Filterer Collector Ratio: 2.53
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 63.00
EPT/C: 12.60
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 165

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 17/1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Closed....Other: Forested/Rural; Water temp.11.4 /pH 8.6 /DO 11.4 /Cond.470

Station: AN0048
Pequest R, Water St , Belvidere, Warren County
Belvidere USGS Quadrangle
Date Sampled: 10/02/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	27
Baetidae	4	16
Ephemerellidae	1	10
Simulidae	6	10
Elmidiae	4	7
Heptageniidae	4	6
Tipulidae	3	4
Chironomidae	6	4
Gammaridae	4	3
Lumbriculidae	8	3
Philopotamidae	3	2
Planariidae	4	2
Polycentropodidae	6	2
Brachycentridae	1	1
Helicopsychidae	3	1
Tetrastemmatidae	7	1
Veliidae	9	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 27.00 % (Hydropsychidae)
Family Biotic Index: 4.12
Scraper/Filterer Collector Ratio: 0.33
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 65.00
EPT/C: 16.25
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 163

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 35/1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Urban/Impoundment upstream; Water temp.10.2 /pH 8.4 /DO 11.8 /Cond.508

Station: AN0049
Pophandusing Bk, Spring St , Belvidere, Warren County
Belvidere USGS Quadrangle
Date Sampled: 10/02/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Ephemerellidae	1	13
Chironomidae	6	10
Elmidae	4	10
Psephenidae	4	9
Philopotamidae	3	8
Hydropsychidae	4	6
BloodRed Chironomidae	8	6
Baetidae	4	5
Planariidae	4	4
Glossosomatidae	0	4
Tetrastemmatidae	7	4
Tubificidae	10	3
Psychomyiidae	2	3
Heptageniidae	4	3
Leptoceridae	4	2
Naididae	7	2
Psychodidae	10	2
Simulidae	6	2
Perlidae	1	1
Enchytraeidae	10	1
Corydalidae	0	1
Veliidae	9	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 100
% Contribution of Dominant Family: 13.00 % (Ephemerellidae)
Family Biotic Index: 4.31
Scraper/Filterer Collector Ratio: 2.44
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 45.00
EPT/C: 2.81
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 147

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 5/1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Grasses,shrubs,trees/Stable
Canopy: Mostly Closed....Other: Suburban; Water temp.9.3 /pH 8.3 /DO 11.6 /Cond.270

Station: AN0050
Buckhorn Ck, Hutchinson Station Rd , Hutchinson, Warren County
Belvidere/Bangore USGS Quadrangle
Date Sampled: 10/02/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	33
Planariidae	4	9
Glossosomatidae	0	8
Elmidae	4	8
Helicopsychidae	3	5
Ephemerellidae	1	4
Gammaridae	4	4
Psephenidae	4	4
Rhyacophilidae	0	4
Chironomidae	6	4
Philopotamidae	3	3
Limnephilidae	4	3
Baetidae	4	2
Heptageniidae	4	2
Tipulidae	3	1
Lumbricidae	10	1
Lumbriculidae	8	1
Veliidae	9	1
Nematoda	6	1
Perlidae	1	1
Psychomyiidae	2	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 100
% Contribution of Dominant Family: 33.00 % (Hydropsychidae)
Family Biotic Index: 3.51
Scraper/Filterer Collector Ratio: 0.94
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 66.00
EPT/C: 16.50
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 159

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 14/<1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Grasses,shrubs,trees/Stable
Canopy: Mostly Closed....Other: Rural/Agricultural cropland and livestock; Water temp.11.3
/pH 8.2 /DO 10.3 /Cond.309

Station: AN0051
Lopatcong Ck, Montana Mountain Rd , Allens Mills, Warren County
Bloomsbury USGS Quadrangle
Date Sampled: 09/18/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Ephemerellidae	1	20
Chironomidae	6	13
Baetidae	4	10
Lumbriculidae	8	9
Heptageniidae	4	8
Hydropsychidae	4	6
Gammaridae	4	5
Oligoneuriidae	2	5
Elmidae	4	4
Tipulidae	3	3
Lumbricidae	10	3
Peltoperlidae	1	3
Limnephilidae	4	2
Leuctridae	0	2
Cordulegastridae	3	1
Glossosomatidae	0	1
Molannidae	6	1
Diplopoda	5	1
Ceratopogonidae	6	1
Tabanidae	6	1
Philopotamidae	3	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 100
% Contribution of Dominant Family: 20.00 % (Ephemerellidae)
Family Biotic Index: 3.91
Scraper/Filterer Collector Ratio: 3.00
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 59.00
EPT/C: 4.54
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 156

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 11/1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Rural; Water temp.16.0 /pH 7.5 /DO 9.4 /Cond.160

Station: AN0052
Lopatcong Ck, Rt 57 , Port Warren, Warren County
Easton USGS Quadrangle
Date Sampled: 09/09/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	38
Hydropsychidae	4	12
Elmidae	4	9
Psephenidae	4	9
Heptageniidae	4	5
Philopotamidae	3	4
Nematoda	6	4
Baetidae	4	4
BloodRed Chironomidae	8	4
Simulidae	6	4
Oligoneuriidae	2	3
Veliidae	9	2
Blood Red Chironomidae	8	1
Gammaridae	4	1
Leptoceridae	4	1
Naididae	7	1
Diplopoda	5	1
Ceratopogonidae	6	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 104
% Contribution of Dominant Family: 36.54 % (Chironomidae)
Family Biotic Index: 5.13
Scraper/Filterer Collector Ratio: 1.07
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 27.88
EPT/C: 0.65
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 97

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Shrubs/Stable
Canopy: Mostly Open....Other: Suburban/Industrial/Agricultural/Channelized;

Station: AN0053
Lopatcong Ck, Old Rt 22 , Alpha, Warren County
Easton USGS Quadrangle
Date Sampled: 09/09/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	37
Chironomidae	6	17
Baetidae	4	11
Lumbriculidae	8	10
Hydroptilidae	4	4
BloodRed Chironomidae	8	4
Asellidae	8	2
Planariidae	4	2
Tubificidae	10	2
Elmidae	4	2
Simulidae	6	2
Blood Red Chironomidae	8	1
Glossosomatidae	0	1
Empididae	6	1
Heptageniidae	4	1
Naididae	7	1
Rhyacophilidae	0	1
Hydropsychidae	4	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 37.00 % (Gammaridae)
Family Biotic Index: 5.15
Scraper/Filterer Collector Ratio: 1.45
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 19.00
EPT/C: 0.86
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 116

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Grasses/Unstable
Canopy: Mostly Open....Other: Urban/Channelized;

Station: AN0054
Pohatcong Ck, Janes Chapel Rd , Nr Mt Bethel, Warren County
Washington USGS Quadrangle
Date Sampled: 08/19/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Heptageniidae	4	20
Elmidae	4	16
Chironomidae	6	13
Tipulidae	3	7
Baetidae	4	5
Hydropsychidae	4	5
Philopotamidae	3	3
Empididae	6	3
Corydalidae	0	3
Psychomyiidae	2	3
Rhyacophilidae	0	3
Naididae	7	2
Peltoperlidae	1	2
BloodRed Chironomidae	8	2
Psephenidae	4	2
Veliidae	9	2
Calopterygidae	5	1
Ephemereellidae	1	1
Glossosomatidae	0	1
Limnephilidae	4	1
Oligoneuriidae	2	1
Lepidostomatidae	1	1
Leuctridae	0	1
Leptoceridae	4	1
Sphaeriidae	8	1
Tetrastemmatidae	7	1
Pteronarcidae	0	1
Simulidae	6	1

Statistical Analysis

Number of Taxa: 28
Total Number of Individuals: 103
% Contribution of Dominant Family: 19.42 % (Heptageniidae)
Family Biotic Index: 4.00
Scraper/Filterer Collector Ratio: 1.75
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 15
% EPT: 47.57
EPT/C: 3.17
NJIS Rating: 30

Biological Condition: Nonimpaired
Habitat Analysis: 180

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 15/1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Closed....Other: Forested/Rural; Water temp.20.0 /pH 7.6 /DO 9.3 /Cond.121

Station: AN0055
Pohatcong Ck, Tunnel Hill Rd , Washington Twp, Warren County
Washington USGS Quadrangle
Date Sampled: 08/19/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Paludicellidae	7	62
Fredericellidae	2	7
Chironomidae	6	7
Heptageniidae	4	6
Elmidae	4	5
Hydropsychidae	4	4
Empididae	6	2
Tipulidae	3	1
Blood Red Chironomidae	8	1
Lumbriculidae	8	1
Baetidae	4	1
Limnephilidae	4	1
Tetrastemmatidae	7	1
Ephemerellidae	1	1

Statistical Analysis

Number of Taxa: 14

Total Number of Individuals: 100

% Contribution of Dominant Family: 62.00 % (Paludicellidae)

Family Biotic Index: 5.97

Scraper/Filterer Collector Ratio: 1.09

Shredder/Total Ratio: 0.00

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5

% EPT: 13.00

EPT/C: 1.63

NJIS Rating: 15

Biological Condition: Moderately Impaired

Habitat Analysis: 133

Deficiency(s) noted: Paludicellidae Family Overwhelmingly Dominant

Observations

Streamwater: Slightly turbid....Flow: Moderate....Width/Depth (ft): 15/2

Substrate: Cobbles,silt....StreamBank Vegetation/Stability: Trees /Stable

Canopy: Mostly Closed....Other: Rural/Agricultural; Water temp.21.4 /pH 7.7 /DO 7.5 /Cond.115

Station: AN0056
Brass Castle Ck, Brass Castle Rd, Washington Twp, Warren County
Belvidere USGS Quadrangle
Date Sampled: 09/16/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	36
Baetidae	4	13
Lumbriculidae	8	9
Elmidae	4	7
Glossosomatidae	0	6
Peltoperlidae	1	5
Perlidae	1	4
Limnephilidae	4	4
Pteronarcidae	0	3
Philopotamidae	3	2
Chironomidae	6	2
Astacidae	7	1
Tipulidae	3	1
Heptageniidae	4	1
Ephemerellidae	1	1
Gammaridae	4	1
Helicopsychidae	3	1
Leuctridae	0	1
Psephenidae	4	1
Simulidae	6	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 36.00 % (Hydropsychidae)
Family Biotic Index: 3.71
Scraper/Filterer Collector Ratio: 0.36
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 77.00
EPT/C: 38.50
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 147

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1
Substrate: Cobbles, gravel, sand, snags....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested/Suburban; Water temp. 15.6 /pH 7.9 /DO 9.9 /Cond. 191

Station: AN0057
Pohatcong Ck, Buttermilk Bridge Rd , Pleasant Valley, Warren County
Bloomsbury USGS Quadrangle
Date Sampled: 08/19/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	42
Chironomidae	6	25
Asellidae	8	8
Elmidae	4	7
Hydroptilidae	4	3
Baetidae	4	3
BloodRed Chironomidae	8	3
Planariidae	4	2
Empididae	6	2
Tubificidae	10	2
Tipulidae	3	1
Brachycentridae	1	1
Nematoda	6	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 42.00 % (Hydropsychidae)
Family Biotic Index: 5.08
Scraper/Filterer Collector Ratio: 0.19
Shredder/Total Ratio: 0.09
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 49.00
EPT/C: 1.75
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 121

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 25/1
Substrate: Gravel,sand....StreamBank Vegetation/Stability: Grasses/Stable
Canopy: Open....Other: Rural/Construction upstream/Wetlands upstream; Sewage odor
Water temp.22.6 /pH 7.6 /DO 8.2 /Cond.237;

Station: AN0058
Pohatcong Ck, Edison Rd , New Village, Warren County
Bloomsbury USGS Quadrangle
Date Sampled: 08/21/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Spongillidae	5	33
Hydropsychidae	4	17
Ephemerellidae	1	10
Elmidae	4	8
Philopotamidae	3	7
Chironomidae	6	7
Baetidae	4	4
Paludicellidae	7	3
Planariidae	4	2
Psephenidae	4	2
Heptageniidae	4	2
Asellidae	8	1
Gammaridae	4	1
Ephydriidae	6	1
Tetrastemmatidae	7	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa:	16
Total Number of Individuals:	100
% Contribution of Dominant Family:	33.00 % (Spongillidae)
Family Biotic Index:	4.32
Scraper/Filterer Collector Ratio:	0.50
Shredder/Total Ratio:	0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera):	5
% EPT:	40.00
EPT/C:	5.00
NJIS Rating:	27
Biological Condition:	Nonimpaired
Habitat Analysis:	158

Observations	

Streamwater:	Turbid....Flow: Moderate....Width/Depth (ft): 40/1
Substrate:	Cobbles....StreamBank Vegetation/Stability: Weeds,trees/Stable
Canopy:	Mostly Closed....Other: Rural/Agricultural; Water temp.17.0 /pH 7.9 /DO 9.0 /Cond.181

Station: AN0059
Merrill Ck, Merrill Creek Rd , Harmony Twp, Warren County
Bloomsbury USGS Quadrangle
Date Sampled: 08/21/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	36
Hydropsychidae	4	30
Tipulidae	3	6
Calopterygidae	5	4
Baetidae	4	4
Philopotamidae	3	4
Heptageniidae	4	4
Caenidae	7	2
Elmidae	4	2
Blood Red Chironomidae	8	1
Limnephilidae	4	1
Gomphidae	1	1
Empididae	6	1
Leuctridae	0	1
Corydalidae	0	1
Psychomyiidae	2	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 36.00 % (Chironomidae)
Family Biotic Index: 4.67
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 47.00
EPT/C: 1.27
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 156

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 6/1
Substrate: Cobbles.gravel,sand....StreamBank Vegetation/Stability:
Trees,shrubs,weeds/Stable
Canopy: Mostly Closed....Other: Forested; Water temp.16.2 /pH 6.9 /DO 8.6 /Cond.127

Station: AN0060
Merrill Ck, Farm Rd Blw Stewartsburg, Warren County
Bloomsbury USGS Quadrangle
Date Sampled: 08/21/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Elmidae	4	40
Baetidae	4	19
Philopotamidae	3	8
Heptageniidae	4	7
Hydropsychidae	4	5
Gammaridae	4	5
Chironomidae	6	4
Leuctridae	0	3
Tipulidae	3	2
Lumbriculidae	8	2
Rhyacophilidae	0	2
Ephemerellidae	1	1
Glossosomatidae	0	1
Empididae	6	1
Perlodidae	2	1
Lumbricidae	10	1
Simulidae	6	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 103
% Contribution of Dominant Family: 38.83 % (Elmidae)
Family Biotic Index: 3.87
Scraper/Filterer Collector Ratio: 2.72
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 45.63
EPT/C: 11.41
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 146

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 6/<1
Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Shrubs,weeds,corn/Stable
Canopy: Open....Other: Rural/Agricultural cropland and livestock; Water temp.14.2 /pH 7.9
/DO 10.8 /Cond.146

Station: AN0061
Pohatcong Ck, Carpentersville Rd , Carpentersville, Warren County
Easton/Reigelsville USGS Quadrangle
Date Sampled: 09/09/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	46
Lumbriculidae	8	8
BloodRed Chironomidae	8	8
Elmidae	4	8
Hydropsychidae	4	5
Glossosomatidae	0	5
Baetidae	4	4
Tubificidae	10	3
Ephemerellidae	1	3
Planariidae	4	2
Heptageniidae	4	2
Lepidostomatidae	1	2
Asellidae	8	1
Chironomidae	6	1
Leptoceridae	4	1
Pyralidae	5	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 46.00 % (Gammaridae)
Family Biotic Index: 4.54
Scraper/Filterer Collector Ratio: 4.17
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 22.00
EPT/C: 2.44
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 120

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 30/1
Substrate: Cobbles,gravel,sand,silt....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Open....Other: Forested/Rural/Agricultural; Water temp.16.1 /pH 6.9 /DO 9.9 /Cond.382

Station: AN0062
Musconetcong R, Blw Lk Hopatcong , Roxbury Twp, Morris County
Stanhope USGS Quadrangle
Date Sampled: 08/12/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	38
Chironomidae	6	34
Planariidae	4	18
Tubificidae	10	3
Baetidae	4	2
Asellidae	8	1
Gammaridae	4	1
Empididae	6	1
BloodRed Chironomidae	8	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 10

Total Number of Individuals: 100

% Contribution of Dominant Family: 38.00 % (Hydropsychidae)

Family Biotic Index: 4.99

Scraper/Filterer Collector Ratio: 0.00

Shredder/Total Ratio: 0.35

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2

% EPT: 40.00

EPT/C: 1.14

NJIS Rating: 21

Biological Condition: Moderately Impaired

Habitat Analysis: 124

Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 30/1

Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Grasses/Stable

Canopy: Mostly Open....Other: Recreation area; Water temp.25.8 /pH 8.1 /DO 8.1 /Cond.309

Station: AN0063
Musconetcong R, Blw Lk Musconetcong , Stanhope, Morris/Sussex County
Stanhope USGS Quadrangle
Date Sampled: 08/12/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	24
Baetidae	4	19
Philopotamidae	3	11
Ephemerellidae	1	9
Gammaridae	4	6
Chironomidae	6	6
Elmidae	4	5
Planariidae	4	4
Glossosomatidae	0	4
Corydalidae	0	3
Perlidae	1	3
Tetrastemmatidae	7	2
Asellidae	8	1
Leptoceridae	4	1
Simulidae	6	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 24.00 % (Hydropsychidae)
Family Biotic Index: 3.49
Scraper/Filterer Collector Ratio: 0.81
Shredder/Total Ratio: 0.12
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 72.00
EPT/C: 12.00
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 170

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 17/1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrus/Stable
Canopy: Mostly Open....Other: Forested/Urban area upstream; Water temp.24.8 /pH 7.8 /DO 7.7 /Cond.365

Station: AN0064
Musconetcong R, Off Rt 604 , Lockwood, Morris/Sussex County
Stanhope USGS Quadrangle
Date Sampled: 08/07/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	31
Gammaridae	4	21
Glossosomatidae	0	15
Chironomidae	6	12
Elmidae	4	4
Limnephilidae	4	3
Brachycentridae	1	3
Baetidae	4	3
Pleuroceridae	6	2
Tetrastemmatidae	7	2
Philopotamidae	3	1
Planariidae	4	1
Empididae	6	1
Lepidostomatidae	1	1
Lumbricidae	10	1
Ephemerellidae	1	1

Statistical Analysis

Number of Taxa: 16

Total Number of Individuals: 102

% Contribution of Dominant Family: 30.39 % (Hydropsychidae)

Family Biotic Index: 3.67

Scraper/Filterer Collector Ratio: 0.75

Shredder/Total Ratio: 0.04

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8

% EPT: 56.86

EPT/C: 4.74

NJIS Rating: 30

Biological Condition: Nonimpaired

Habitat Analysis: 181

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 17/1

Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs/Stable

Canopy: Mostly Closed....Other: Forested; Water temp.22.1 /pH 8.3 /DO 8.6 /Cond.483

Station: AN0065
Lubbers Run, Rt 607 , Hopatcong, Sussex County
Stanhope USGS Quadrangle
Date Sampled: 08/07/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	49
Oligoneuriidae	2	26
Chironomidae	6	9
Elmidae	4	5
Perlidae	1	4
Philopotamidae	3	3
Corydalidae	0	3
Psephenidae	4	3
Tipulidae	3	1
Empididae	6	1
Gomphidae	1	1
Leuctridae	0	1
Baetidae	4	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 108
% Contribution of Dominant Family: 45.37 % (Hydropsychidae)
Family Biotic Index: 3.38
Scraper/Filterer Collector Ratio: 0.10
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 78.70
EPT/C: 8.74
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 177

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 16/1
Substrate: Cobbles gravel,sand....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Closed....Other: Suburban; Water temp.19.4 /pH 8.2 /DO 9.7 /Cond.312

Station: AN0066
Lubbers Run, Rt 206 , Lockwood, Sussex County
Stanhope USGS Quadrangle
Date Sampled: 08/07/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	25
Elmidae	4	25
Chironomidae	6	18
Tetrastemmatidae	7	5
Limnephilidae	4	4
Tipulidae	3	3
Hydropsychidae	4	3
Brachycentridae	1	2
Baetidae	4	2
Sphaeriidae	8	2
Protoneuridae	9	1
Blood Red Chironomidae	8	1
Planorbidae	6	1
Empididae	6	1
Gomphidae	1	1
Asellidae	8	1
Lumbricidae	10	1
Lumbriculidae	8	1
Polycentropodidae	6	1
Glossosomatidae	0	1
Psychomyiidae	2	1
Rhyacophilidae	0	1

Statistical Analysis

Number of Taxa: 22

Total Number of Individuals: 101

% Contribution of Dominant Family: 24.75 % (Gammaridae & Elmidae)

Family Biotic Index: 4.65

Scraper/Filterer Collector Ratio: 1.13

Shredder/Total Ratio: 0.06

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8

% EPT: 14.85

EPT/C: 0.78

NJIS Rating: 27

Biological Condition: Nonimpaired

Habitat Analysis: 173

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 17/1

Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Trees/Stable

Canopy: Mostly Closed....Other: Forested/Suburban; Water temp.19.1 /pH 8.0 /DO 8.4 /Cond.312

Station: AN0067
Mine Bk, Rt 517 , Mansfield Twp, Morris County
Hackettstown USGS Quadrangle
Date Sampled: 08/05/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	29
Hydropsychidae	4	24
Philopotamidae	3	11
Naididae	7	7
Heptageniidae	4	5
Elmidae	4	4
Gammaridae	4	3
Baetidae	4	3
Diplopoda	5	3
Lepidostomatidae	1	2
Perlidae	1	1
Planariidae	4	1
Hydrobiidae	8	1
Leuctridae	0	1
Lumbriculidae	8	1
Veliidae	9	1
Pteronarcidae	0	1
Ephemerellidae	1	1
Simulidae	6	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Chironomidae)
Family Biotic Index: 4.66
Scraper/Filterer Collector Ratio: 0.25
Shredder/Total Ratio: 0.36
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 49.00
EPT/C: 1.69
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 107

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 6/1
Substrate: Cobles,gravel,silt,snags....StreamBank Vegetation/Stability:
Trees,shrubs,weeds/Stable
Canopy: Mostly Open....Other: Forested/Golf course upstream; Water temp.24.3 /pH 8.1 /DO
7.6 /Cond.127

Station: AN0068
Trout Bk, Rt 57 , Hackettstown, Warren County
Hackettstown USGS Quadrangle
Date Sampled: 08/05/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	38
Hydropsychidae	4	25
Paludicellidae	7	8
Chironomidae	6	7
Planariidae	4	6
Elmidae	4	6
Philopotamidae	3	3
Gammaridae	4	2
Empididae	6	1
Baetidae	4	1
Perlidae	1	1
Tetrastemmatidae	7	1
Psychomyiidae	2	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 38.00 % (Asellidae)
Family Biotic Index: 5.87
Scraper/Filterer Collector Ratio: 0.21
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 31.00
EPT/C: 4.43
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 123

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 25/1
Substrate: Cobbles,gravel,sand,silt....StreamBank Vegetation/Stability: Trees/Unstable
Canopy: Mostly Closed....Other: Forested/Suburban; Water temp.21.1 /pH 8.0 /DO 7.8 /Cond.500

Station: AN0069
Musconetcong R, Kings Hwy, Beattystown, Morris/Warren County
Hackettstown USGS Quadrangle
Date Sampled: 08/05/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	24
Baetidae	4	18
Ephemerellidae	1	13
Lumbriculidae	8	8
Brachycentridae	1	7
Helicopsychidae	3	5
Chironomidae	6	5
Lepidostomatidae	1	3
Elmidae	4	3
Simulidae	6	3
Philopotamidae	3	2
Oligoneuriidae	2	2
Perlidae	1	1
Hydroptilidae	4	1
Corydalidae	0	1
Gammaridae	4	1
Nematoda	6	1
Pleuroceridae	6	1
Glossosomatidae	0	1

Statistical Analysis

Number of Taxa: 19

Total Number of Individuals: 100

% Contribution of Dominant Family: 24.00 % (Hydropsychidae)

Family Biotic Index: 3.61

Scraper/Filterer Collector Ratio: 0.90

Shredder/Total Ratio: 0.10

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11

% EPT: 77.00

EPT/C: 15.40

NJIS Rating: 30

Biological Condition: Nonimpaired

Habitat Analysis: 148

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 50/1.5

Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Weeds/Unstable

Canopy: Open....Other: Forested/Suburban; Water temp.18.8 /pH 8.2 /DO 9.3 /Cond.480

Station: AN0070
Hances Bk, Rt 57 , Beattystown, Warren County
Hackettstown USGS Quadrangle
Date Sampled: 08/05/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	50
Hydropsychidae	4	27
Spongillidae	5	6
Elmidae	4	4
Empididae	6	3
Naididae	7	2
Tipulidae	3	2
BloodRed Chironomidae	8	2
Glossosomatidae	0	1
Lumbricidae	10	1
Lumbriculidae	8	1
Physidae	7	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 50.00 % (Chironomidae)
Family Biotic Index: 5.33
Scraper/Filterer Collector Ratio: 0.19
Shredder/Total Ratio: 0.52
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 28.00
EPT/C: 0.54
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 165
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 8/1
Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested/Rural; Water temp.17.4 /pH 7.6 /DO 8.6 /Cond.213

Station: AN0071
Musconetcong R Trib, Rt 57 , Penwell, Warren County
Washington USGS Quadrangle
Date Sampled: 08/12/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	29
Hydropsychidae	4	22
Baetidae	4	12
Gammaridae	4	11
Lumbriculidae	8	8
Nematoda	6	6
Leuctridae	0	3
Elmidae	4	3
Peltoperlidae	1	3
Glossosomatidae	0	2
Oligoneuriidae	2	2
BloodRed Chironomidae	8	2
Physidae	7	2
Heptageniidae	4	2
Tipulidae	3	1
Empididae	6	1
Perlidae	1	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 110
% Contribution of Dominant Family: 26.36 % (Chironomidae)
Family Biotic Index: 4.74
Scraper/Filterer Collector Ratio: 0.17
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 42.73
EPT/C: 1.38
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 159

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 7/1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Closed....Other: Rural/Agricultural cropland and livestock; Water temp.17.1
/pH 8.3 /DO 10.6 /Cond.215

Station: AN0072
Musconetcong R, New Hampton Rd , New Hampton, Hunterdon/Warren County
High Bridge USGS Quadrangle
Date Sampled: 07/08/97

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	38
Tubificidae	10	36
Lumbriculidae	8	10
Sphaeriidae	8	7
Brachycentridae	1	2
Gammaridae	4	2
Chironomidae	6	1
Corixidae	9	1
Baetidae	4	1
Physidae	7	1
Tricorythidae	4	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 100
% Contribution of Dominant Family: 38.00 % (BloodRed Chironomidae)
Family Biotic Index: 8.40
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 4.00
EPT/C: 0.10
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 176
Deficiency(s) noted: Significant Organic Pollution
Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 50/1
Substrate: Cobbles,gravel,silt....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Open....Other: Forested/Rural;

Station: AN0073
Musconetcong R, Rt 579 , Bloomsbury, Hunterdon/Warren County
Bloomsbury USGS Quadrangle
Date Sampled: 07/08/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Tricorythidae	4	15
Hydropsychidae	4	14
Elmidae	4	12
Gammaridae	4	10
Hydroptilidae	4	9
Caenidae	7	7
Planariidae	4	7
Ephemerellidae	1	6
Chironomidae	6	5
Baetidae	4	5
Leptoceridae	4	2
Perlidae	1	2
Brachycentridae	1	1
Philopotamidae	3	1
Polymitarcyidae	2	1
Lumbriculidae	8	1
Physidae	7	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 15.00 % (Tricorythidae)
Family Biotic Index: 4.08
Scraper/Filterer Collector Ratio: 1.38
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 64.00
EPT/C: 12.80
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 185

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 35/<1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Open....Other: Rural/Impoundment upstream;

Station: AN0074
Musconetcong R, River Rd , Reigelsville, Hunterdon/Warren County
Reigelsville USGS Quadrangle
Date Sampled: 07/08/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	47
Chironomidae	6	10
Baetidae	4	9
Polymitarcyidae	2	8
Perlidae	1	3
Caenidae	7	3
Gammaridae	4	3
Elmidae	4	3
Naididae	7	3
Philopotamidae	3	2
Ephemerellidae	1	2
Ephydriidae	6	1
Glossosomatidae	0	1
Nematoda	6	1
BloodRed Chironomidae	8	1
Tetrastemmatidae	7	1
Simulidae	6	1
Tricorythidae	4	1

Statistical Analysis

Number of Taxa: 18

Total Number of Individuals: 100

% Contribution of Dominant Family: 47.00 % (Hydropsychidae)

Family Biotic Index: 4.14

Scraper/Filterer Collector Ratio: 0.00

Shredder/Total Ratio: 0.14

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9

% EPT: 76.00

EPT/C: 6.91

NJIS Rating: 27

Biological Condition: Nonimpaired

Habitat Analysis: 184

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 30/1

Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Stable

Canopy: Mostly Open....Other: Forested/Rural; Water temp.21.6 /pH 8.1 /DO 7.4 /Cond.383

Station: AN0075
Hakihokake Ck, Mylar Rd , Nr Little York, Hunterdon County
Bloomsbury USGS Quadrangle
Date Sampled: 07/08/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	18
Leuctridae	0	13
Elmidae	4	10
Chironomidae	6	7
Baetidae	4	6
Tipulidae	3	6
Lumbriculidae	8	5
Veliidae	9	5
Perlidae	1	4
BloodRed Chironomidae	8	3
Philopotamidae	3	3
Ephemerellidae	1	3
Glossosomatidae	0	3
Chloroperlidae	1	2
Perlodidae	2	2
Peltoperlidae	1	2
Heptageniidae	4	1
Oligoneuriidae	2	1
Gomphidae	1	1
Leptophlebiidae	2	1
Limnephilidae	4	1
Gerridae	8	1
Simulidae	6	1
Hydropsychidae	4	1

Statistical Analysis

Number of Taxa: 24
Total Number of Individuals: 100
% Contribution of Dominant Family: 18.00 % (Gammaridae)
Family Biotic Index: 3.60
Scraper/Filterer Collector Ratio: 1.23
Shredder/Total Ratio: 0.16
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 14

% EPT: 43.00
EPT/C: 4.30
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 174

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/<1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested/Rural;

Station: AN0076
Hakihokake Ck, Miller Park Rd , Holland Twp, Hunterdon County
Frenchtown USGS Quadrangle
Date Sampled: 07/10/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	22
Philopotamidae	3	21
Hydropsychidae	4	19
Perlidae	1	7
Heptageniidae	4	4
Ephemerellidae	1	4
Glossosomatidae	0	3
Tipulidae	3	3
Leuctridae	0	3
Psephenidae	4	3
Rhyacophilidae	0	3
Lumbriculidae	8	2
Elmidae	4	2
Caenidae	7	1
Oligoneuriidae	2	1
Lumbricidae	10	1
Baetidae	4	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 22.00 % (Chironomidae)
Family Biotic Index: 3.66
Scraper/Filterer Collector Ratio: 0.24
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 67.00
EPT/C: 3.05
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 176

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 30/1.5
Substrate: Cobbles,gravel,sand,snags....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested; Water temp.22.9 /pH 8.1 /DO 8.8 /Cond.142

Station: AN0077
Hakihokake Ck, Bridge St , Milford, Hunterdon County
Frenchtown USGS Quadrangle
Date Sampled: 07/10/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Tricorythidae	4	25
Chironomidae	6	15
Ephemerellidae	1	9
Caenidae	7	7
Hydropsychidae	4	7
Perlidae	1	7
Heptageniidae	4	5
Baetidae	4	4
BloodRed Chironomidae	8	4
Glossosomatidae	0	4
Lepidostomatidae	1	3
Philopotamidae	3	2
Lumbriculidae	8	2
Elmidae	4	2
Polycentropodidae	6	2
Leptoceridae	4	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 25.00 % (Tricorythidae)
Family Biotic Index: 4.07
Scraper/Filterer Collector Ratio: 0.58
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 76.00
EPT/C: 4.00
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 85

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Trees,grass/Unstable
Canopy: Open....Other: Urban; Water temp.22.1 /pH 8.4 /DO 9.8 /Cond.200

Station: AN0078
Harihokake Ck, Hartpence Rd , Alexandria, Hunterdon County
Frenchtown USGS Quadrangle
Date Sampled: 07/10/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Philopotamidae	3	20
Hydropsychidae	4	18
Chironomidae	6	12
Glossosomatidae	0	9
Lumbriculidae	8	7
Perlidae	1	5
Tipulidae	3	4
Baetidae	4	4
Ephemerellidae	1	3
Limnephilidae	4	3
Caenidae	7	2
Heptageniidae	4	2
Leuctridae	0	2
Elmidae	4	2
Astacidae	7	1
Oligoneuriidae	2	1
Lumbricidae	10	1
Tetrastemmatidae	7	1
Psephenidae	4	1
Rhyacophilidae	0	1
Simulidae	6	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 100
% Contribution of Dominant Family: 20.00 % (Philopotamidae)
Family Biotic Index: 3.74
Scraper/Filterer Collector Ratio: 0.50
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 70.00
EPT/C: 5.83
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 171

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 7/<1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,vines,weeds/Stable
Canopy: Closed....Other: Forested; Water temp.25.0 /pH 7.7 /DO 8.9 /Cond.64

Station: AN0079
Harihokake Ck, River Rd , Abv Frenchtown, Hunterdon County
Frenchtown USGS Quadrangle
Date Sampled: 07/10/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	15
Heptageniidae	4	15
Chironomidae	6	13
Oligoneuriidae	2	10
Baetidae	4	9
Physidae	7	8
Glossosomatidae	0	5
Perlidae	1	3
Philopotamidae	3	3
Gammaridae	4	3
Tricorythidae	4	3
Psephenidae	4	2
Ephemerellidae	1	2
Tipulidae	3	2
Asellidae	8	1
Leptoceridae	4	1
Caenidae	7	1
Helicopsychidae	3	1
Lepidostomatidae	1	1
Leptophlebiidae	2	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 100
% Contribution of Dominant Family: 15.00 % (Hydropsychidae & Heptageniidae)
Family Biotic Index: 3.91
Scraper/Filterer Collector Ratio: 0.86
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 14
% EPT: 70.00
EPT/C: 5.38
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 146

Observations

Streamwater: Slightly Turbid....Flow: Fast....Width/Depth (ft): 20/<1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability:
Trees,shrubs,weeds/Stable
Canopy: Closed....Other: Forested/Suburban; Water temp.21.6 /pH 7.9 /DO 8.3 /Cond.135

Station: AN0080
Nishisakawick Ck, Airport Rd , Alexandria Twp, Hunterdon County
Frenchtown USGS Quadrangle
Date Sampled: 07/22/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	23
Hydropsychidae	4	12
Elmidae	4	7
BloodRed Chironomidae	8	7
Perlidae	1	6
Sphaeriidae	8	5
Heptageniidae	4	5
Caenidae	7	4
Tipulidae	3	3
Lepidostomatidae	1	3
Leuctridae	0	3
Lumbricidae	10	3
Aeshnidae	3	2
Blood Red Chironomidae	8	2
Planorbidae	6	2
Sialidae	4	2
Baetidae	4	1
Philopotamidae	3	1
Glossosomatidae	0	1
Empididae	6	1
Hydrophilidae	5	1
Gomphidae	1	1
Tubificidae	10	1
Limnephilidae	4	1
Physidae	7	1
Polycentropodidae	6	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 27
Total Number of Individuals: 100
% Contribution of Dominant Family: 23.00 % (Chironomidae)
Family Biotic Index: 4.98
Scraper/Filterer Collector Ratio: 1.10
Shredder/Total Ratio: 0.14
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 39.00
EPT/C: 1.22
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 180

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 4</1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Closed....Other: Forested; Water temp.21.6 /pH 7.6 /DO 8.2 /Cond.105

Station: AN0081
Nishisakawick Ck, Off Creek Rd Blw Everittstown, Hunterdon County
Frenchtown USGS Quadrangle
Date Sampled: 07/22/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	27
Hydropsychidae	4	25
Baetidae	4	11
Heptageniidae	4	6
Tipulidae	3	4
Corixidae	9	3
Caenidae	7	2
Philopotamidae	3	2
Elmidae	4	2
Empididae	6	2
Oligoneuriidae	2	2
Leptoceridae	4	2
Naididae	7	2
BloodRed Chironomidae	8	2
Physidae	7	2
Perlidae	1	1
Lepidostomatidae	1	1
Lumbriculidae	8	1
Leptophlebiidae	2	1
Sphaeriidae	8	1
Psephenidae	4	1
Odontoceridae	0	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 23
Total Number of Individuals: 102
% Contribution of Dominant Family: 26.47 % (Chironomidae)
Family Biotic Index: 4.83
Scraper/Filterer Collector Ratio: 0.36
Shredder/Total Ratio: 0.31
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 52.94
EPT/C: 1.83
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 165

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 17/1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Open....Other: Forested/Agricultural livestock; Water temp.20.3 /pH 7.9 /DO 8.1 /Cond.159

Station: AN0082
Nishisakawick Ck, Creek Rd , Frenchtown, Hunterdon County
Frenchtown USGS Quadrangle
Date Sampled: 07/22/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	24
Heptageniidae	4	18
Baetidae	4	15
Lepidostomatidae	1	14
Physidae	7	7
Leptoceridae	4	4
Hydropsychidae	4	3
BloodRed Chironomidae	8	3
Caenidae	7	2
Lumbricidae	10	2
Tipulidae	3	2
Philopotamidae	3	1
Erpobdellidae	8	1
Helicopsychidae	3	1
Empididae	6	1
Oligoneuriidae	2	1
Leuctridae	0	1
Brachycentridae	1	1
Polycentropodidae	6	1
Tetrastemmatidae	7	1
Psephenidae	4	1
Odontoceridae	0	1
Veliidae	9	1
Lymnaeidae	6	1

Statistical Analysis

Number of Taxa: 24
Total Number of Individuals: 107
% Contribution of Dominant Family: 22.43 % (Chironomidae)
Family Biotic Index: 4.54
Scraper/Filterer Collector Ratio: 0.80
Shredder/Total Ratio: 0.17
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 13

% EPT: 58.88
EPT/C: 2.18
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 171

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 30/1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Open....Other: Forested; Water temp.20.4 /pH 8.0 /DO 8.7 /Cond.175

Station: AN0083
Little Nishisakawick Ck, Rt 29 , Frenchtown, Hunterdon County
Frenchtown USGS Quadrangle
Date Sampled: 07/10/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	14
Psephenidae	4	13
Philopotamidae	3	12
Lepidostomatidae	1	10
Chironomidae	6	10
Baetidae	4	9
Glossosomatidae	0	7
Hydroptilidae	4	7
Physidae	7	3
Heptageniidae	4	2
Erpobdellidae	8	2
Veliidae	9	2
Gerridae	8	2
Limnephilidae	4	1
Caenidae	7	1
Tipulidae	3	1
Lumbriculidae	8	1
Leptoceridae	4	1
Naididae	7	1
Perlidae	1	1

Statistical Analysis

Number of Taxa:	20
Total Number of Individuals:	100
% Contribution of Dominant Family:	14.00 % (Hydropsychidae)
Family Biotic Index:	3.91
Scraper/Filterer Collector Ratio:	1.15
Shredder/Total Ratio:	0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera):	11
% EPT:	65.00
EPT/C:	6.50
NJIS Rating:	30
Biological Condition:	Nonimpaired
Habitat Analysis:	148
Observations	
Streamwater:	Clear....Flow: Moderate....Width/Depth (ft): 6/<1
Substrate:	Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs,weeds/Stable
Canopy:	Mostly Closed....Other: Suburban; Water temp.21.0 /pH 7.8 /DO 7.5 /Cond.226

Station: AN0084
Copper Ck, Horseshoe Bend Rd , Kingwood Twp, Hunterdon County
Frenchtown USGS Quadrangle
Date Sampled: 07/15/97

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	36
Chironomidae	6	33
Leptoceridae	4	14
Naididae	7	3
Psephenidae	4	3
Blood Red Chironomidae	8	2
Leptophlebiidae	2	2
Sialidae	4	2
Hydropsychidae	4	2
Baetidae	4	1
Veliidae	9	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 36.00 % (BloodRed Chironomidae)
Family Biotic Index: 6.28
Scraper/Filterer Collector Ratio: 2.09
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 19.00
EPT/C: 0.27
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 144

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 4/<1
Substrate: Bedrock....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested/Agricultural; Water temp.21.9 /pH 7.2 /DO 7.9 /Cond.183

Station: AN0085
Warford Ck, Rt 29 , Kingwood Station, Hunterdon County
Lumberville USGS Quadrangle
Date Sampled: 07/15/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	66
BloodRed Chironomidae	8	19
Leptoceridae	4	6
Sialidae	4	6
Hydropsychidae	4	3
Leuctridae	0	2
Perlidae	1	1
Dolichopodidae	4	1
Philopotamidae	3	1
Tubificidae	10	1
Lumbriculidae	8	1
Baetidae	4	1
Gerridae	8	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 109
% Contribution of Dominant Family: 60.55 % (Chironomidae)
Family Biotic Index: 5.93
Scraper/Filterer Collector Ratio: 1.23
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 12.84
EPT/C: 0.15
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 136
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 2/<1
Substrate: Gravel....StreamBank Vegetation/Stability: Trees, shrubs/Stable
Canopy: Mostly Closed....Other: Forested; Water temp. 23.2 /pH 7.6 /DO 8.3 /Cond. 174

Station: AN0086
Lockatong Ck, Oak Grove Rd , Oak Grove, Hunterdon County
Pittstown USGS Quadrangle
Date Sampled: 07/15/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	23
Elmidae	4	23
Chironomidae	6	13
Sphaeriidae	8	9
Gomphidae	1	5
Leptoceridae	4	5
Philopotamidae	3	4
Baetidae	4	3
Heptageniidae	4	3
Tipulidae	3	3
Planorbidae	6	2
Limnephilidae	4	1
Astacidae	7	1
Lampyridae	6	1
Lepidostomatidae	1	1
Psephenidae	4	1
Simuliidae	6	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 23.00 % (Hydropsychidae & Elmidae)
Family Biotic Index: 4.52
Scraper/Filterer Collector Ratio: 0.81
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 40.00
EPT/C: 2.86
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 151

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 13/<1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Closed....Other: Forested/Agricultural; Water temp.23.8 /pH 7.2 /DO 7.9 /Cond.174

Station: AN0087
Lockatong Ck, Rt 12 , Baptistsown, Hunterdon County
Pittstown USGS Quadrangle
Date Sampled: 07/15/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	56
Elmidae	4	15
Philopotamidae	3	8
Leptoceridae	4	6
Chironomidae	6	5
Psephenidae	4	3
Athericidae	2	1
Empididae	6	1
Gomphidae	1	1
Lepidostomatidae	1	1
Veliidae	9	1
Tipulidae	3	1
Dytiscidae	5	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 56.00 % (Hydropsychidae)
Family Biotic Index: 4.01
Scraper/Filterer Collector Ratio: 0.28
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 71.00
EPT/C: 14.20
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 146

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 30/1
Substrate: Cobbles....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Open....Other: Rural/Agricultural; Water temp.24.0 /pH7.3 /DO 5.8 /Cond.176

Station: AN0088
Lockatong Ck, Rt 519 , Kingwood Twp, Hunterdon County
Lumberville USGS Quadrangle
Date Sampled: 07/15/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	31
Elmidae	4	14
Philopotamidae	3	10
Psephenidae	4	7
Baetidae	4	5
Lepidostomatidae	1	4
Chironomidae	6	4
Leptoceridae	4	4
Heptageniidae	4	4
Planariidae	4	3
Oligoneuriidae	2	3
Veliidae	9	3
Helicopsychidae	3	2
Tipulidae	3	1
Athericidae	2	1
Erpobdellidae	8	1
Diplopoda	5	1
Sperchonidae	2	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 100
% Contribution of Dominant Family: 31.00 % (Hydropsychidae)
Family Biotic Index: 3.97
Scraper/Filterer Collector Ratio: 0.60
Shredder/Total Ratio: 0.09
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 63.00
EPT/C: 15.75
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 148

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 30/1
Substrate: Cobbles....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested/Rural; Water temp.23.9 /pH 7.3 /DO 6.0 /Cond.192

Station: AN0089
Lockatong Ck, Rt 29 , Raven Rock, Hunterdon County
Lumberville USGS Quadrangle
Date Sampled: 07/15/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	24
Baetidae	4	21
Chironomidae	6	15
Philopotamidae	3	11
Elmidae	4	8
Naididae	7	4
Nematoda	6	3
Tipulidae	3	2
Lepidostomatidae	1	2
Lumbriculidae	8	2
Psephenidae	4	2
Corydalidae	0	1
Lumbricidae	10	1
Brachycentridae	1	1
Physidae	7	1
Veliidae	9	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 24.00 % (Hydropsychidae)
Family Biotic Index: 4.44
Scraper/Filterer Collector Ratio: 0.31
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 60.00
EPT/C: 4.00
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 138

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 11/1
Substrate: Cobbles....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Open....Other: Forested; Water temp.25.5 /pH 8.7 /DO - /Cond.150

Station: AN0090
Wickecheeoke Ck, Rt 579 , Croton, Hunterdon County
Pittstown USGS Quadrangle
Date Sampled: 06/02/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	30
Chironomidae	6	21
Naididae	7	18
Physidae	7	10
Asellidae	8	8
Baetidae	4	7
Tubificidae	10	3
Planorbidae	6	2
Erpobdellidae	8	2
Elmidae	4	2
Gerridae	8	2
Dytiscidae	5	1
Nemouridae	2	1
Culicidae	8	1
BloodRed Chironomidae	8	1
Corixidae	9	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 110
% Contribution of Dominant Family: 27.27 % (Gammaridae)
Family Biotic Index: 5.89
Scraper/Filterer Collector Ratio: 4.00
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 7.27
EPT/C: 0.33
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 168
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 9/1
Substrate: Cobbles....StreamBank Vegetation/Stability: Trees,shrubs,grasses/Stable
Canopy: Mostly Open....Other: Rural; Water temp.16.7 /pH 6.6 /DO 7.0 /Cond.159

Station: AN0091
Wickecheoke Ck, Locktown-Sergeantsville Rd , Locktown, Hunterdon County
Stockton USGS Quadrangle
Date Sampled: 07/16/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	36
Corixidae	9	20
Heptageniidae	4	7
Glossiphoniidae	8	6
Psephenidae	4	6
Baetidae	4	5
Chironomidae	6	5
Physidae	7	4
Leptoceridae	4	3
Planorbidae	6	2
Asellidae	8	1
Aeshnidae	3	1
Protoneuriidae	9	1
Lumbriculidae	8	1
Sialidae	4	1
Dytiscidae	5	1

Statistical Analysis

Number of Taxa: 16

Total Number of Individuals: 100

% Contribution of Dominant Family: 36.00 % (Gammaridae)

Family Biotic Index: 5.63

Scraper/Filterer Collector Ratio: 2.60

Shredder/Total Ratio: 0.01

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3

% EPT: 15.00

EPT/C: 3.00

NJIS Rating: 21

Biological Condition: Moderately Impaired

Habitat Analysis: 165

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 60/1

Substrate: Cobbles....StreamBank Vegetation/Stability: Trees/Stable

Canopy: Mostly Open....Other: Forested/Rural; Water temp.18.8 /pH 7.4 /DO 6.6 /Cond.167

Station: AN0092
Plum Bk, Rt 579 , Nr Croton, Hunterdon County
Stockton USGS Quadrangle
Date Sampled: 06/02/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	24
Physidae	7	19
Corixidae	9	13
Baetidae	4	10
Leptophlebiidae	2	7
Naididae	7	5
Planorbidae	6	4
Perlodidae	2	4
Gerridae	8	4
Lumbricidae	10	3
Nemouridae	2	2
Dytiscidae	5	2
Lepidostomatidae	1	1
BloodRed Chironomidae	8	1
Lymnaeidae	6	1

Statistical Analysis

Number of Taxa:	15
Total Number of Individuals:	100
% Contribution of Dominant Family:	24.00 % (Chironomidae)
Family Biotic Index:	6.06
Scraper/Filterer Collector Ratio:	0.00
Shredder/Total Ratio:	0.27
E+P+T (Ephemeroptera, Plecoptera, Trichoptera):	5
% EPT:	24.00
EPT/C:	0.96
NJIS Rating:	21
Biological Condition:	Moderately Impaired
Habitat Analysis:	163
Observations	
Streamwater:	Clear....Flow: Slow....Width/Depth (ft): 5/<1
Substrate:	Cobbles....StreamBank Vegetation/Stability: Trees, shrubs, grasses/Stable
Canopy:	Mostly Open....Other: Rural/Agricultural cropland; Water temp.15.5 /pH 7.0 /DO 7.6 /Cond.171

Station: AN0093
Plum Bk, Pine Hill Rd , Delaware Twp, Hunterdon County
Stockton USGS Quadrangle
Date Sampled: 07/16/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	66
BloodRed Chironomidae	8	16
Leptophlebiidae	2	5
Heptageniidae	4	5
Tubificidae	10	2
Sialidae	4	2
Elmidae	4	1
Gomphidae	1	1
Physidae	7	1
Psephenidae	4	1

Statistical Analysis

Number of Taxa: 10

Total Number of Individuals: 100

% Contribution of Dominant Family: 66.00 % (Chironomidae)

Family Biotic Index: 5.98

Scraper/Filterer Collector Ratio: 0.35

Shredder/Total Ratio: 0.00

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2

% EPT: 10.00

EPT/C: 0.12

NJIS Rating: 9

Biological Condition: Moderately Impaired

Habitat Analysis: 170

Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant
Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 50/1

Substrate: Cobbles....StreamBank Vegetation/Stability: Trees/Stable

Canopy: Mostly Closed....Other: Forested/Rural; Water temp.16.7/pH 7.0 /DO 7.3 /Cond.157

Station: AN0094
Wickechoke Ck, Sergeantsville Rd , Sergeantsville, Hunterdon County
Stockton USGS Quadrangle
Date Sampled: 07/15/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	36
Chironomidae	6	21
Elmidae	4	7
Gammaridae	4	6
Tipulidae	3	5
Empididae	6	5
Philopotamidae	3	3
Baetidae	4	2
Hydroptilidae	4	2
Simulidae	6	2
Heptageniidae	4	2
Glossosomatidae	0	1
Hydridae	5	1
Tubificidae	10	1
Leptoceridae	4	1
Perlidae	1	1
Polycentropodidae	6	1
Psephenidae	4	1
Psychomyiidae	2	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 36.00 % (Hydropsychidae)
Family Biotic Index: 4.51
Scraper/Filterer Collector Ratio: 0.21
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 10
% EPT: 50.00
EPT/C: 2.38
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 168

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 50/1
Substrate: Cobbles....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Open....Other: Forested/Rural; Water temp.17.8 /pH 7.7 /DO 7.3 /Cond.177

Station: AN0095
Wickecheoke Ck, Rt 29 , Prallsville, Hunterdon County
Stockton USGS Quadrangle
Date Sampled: 07/15/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	53
Hydropsychidae	4	15
Heptageniidae	4	9
Baetidae	4	6
Naididae	7	4
Empididae	6	3
Tipulidae	3	2
Lepidostomatidae	1	2
Polycentropodidae	6	2
Hydroptilidae	4	1
Lumbricidae	10	1
Lumbriculidae	8	1
Brachycentridae	1	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 53.00 % (Chironomidae)
Family Biotic Index: 5.27
Scraper/Filterer Collector Ratio: 0.14
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 36.00
EPT/C: 0.68
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 168

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 50/<1
Substrate: Cobbles....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Open....Other: Forested/Rural; Water temp.17.5 /pH 7.7 /DO 6.2 /Cond.202

Station: AN0096
Alexauken Ck, Lambertville Rd , W Amwell Twp, Hunterdon County
Stockton USGS Quadrangle
Date Sampled: 07/14/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	25
Philopotamidae	3	16
Elmidae	4	16
Chironomidae	6	14
Sphaeriidae	8	8
Planariidae	4	7
Baetidae	4	6
Helicopsychidae	3	2
Heptageniidae	4	2
Naididae	7	1
Nematoda	6	1
Tetrastemmatidae	7	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 25.00 % (Hydropsychidae)
Family Biotic Index: 4.52
Scraper/Filterer Collector Ratio: 0.40
Shredder/Total Ratio: 0.14
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 51.00
EPT/C: 3.64
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 166

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15/1
Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Trees,weeds/Stable
Canopy: Mostly Open....Other: Forested/Rural/; Water temp.11.9 /pH 6.9 /DO 8.0 /Cond.278

Station: AN0097
Alexauken Ck Trib, Queen Rd And Alexauken Ck Rd , Mt Airy, Hunterdon County
Stockton USGS Quadrangle
Date Sampled: 07/14/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	22
Psephenidae	4	20
BloodRed Chironomidae	8	14
Planariidae	4	9
Chironomidae	6	8
Philopotamidae	3	8
Elmidae	4	6
Tipulidae	3	5
Glossosomatidae	0	2
Athericidae	2	1
Veliidae	9	1
Notonectidae	9	1
Peltoperlidae	1	1
Heptageniidae	4	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 22.00 % (Hydropsychidae)
Family Biotic Index: 4.58
Scraper/Filterer Collector Ratio: 0.97
Shredder/Total Ratio: 0.15
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 34.00
EPT/C: 1.55
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 166

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 20/<1
Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested/Rural/Agricultural cropland and livestock; Water temp.12.7 /pH 6.2 /DO 9.6 /Cond.373

Station: AN0098
Alexauken Ck, Rt 29 , Lambertville, Hunterdon County
Stockton USGS Quadrangle
Date Sampled: 07/09/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Baetidae	4	29
Hydropsychidae	4	28
Chironomidae	6	22
Heptageniidae	4	5
Philopotamidae	3	3
Empididae	6	3
Naididae	7	3
Tipulidae	3	1
Planariidae	4	1
Hydroptilidae	4	1
Lepidostomatidae	1	1
Nematoda	6	1
Tetrastemmatidae	7	1
Veliidae	9	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Baetidae)
Family Biotic Index: 4.62
Scraper/Filterer Collector Ratio: 0.19
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 67.00
EPT/C: 3.05
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 166

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 30/<1
Substrate: Cobbles....StreamBank Vegetation/Stability: Trees,weeds/Stable
Canopy: Open....Other: Forested/Rural; Water temp.20.3 /pH 8.1 /DO 8.6 /Cond.306

Station: AN0099
Swan Ck, Swan St, Lambertville, Hunterdon County
Lambertville USGS Quadrangle
Date Sampled: 07/09/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	29
Simulidae	6	19
Hydropsychidae	4	14
Gammaridae	4	12
Baetidae	4	7
Psephenidae	4	6
Elmidae	4	5
Asellidae	8	2
Planorbidae	6	2
Empididae	6	1
Erpobdellidae	8	1
Naididae	7	1
Nematoda	6	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Chironomidae)
Family Biotic Index: 5.19
Scraper/Filterer Collector Ratio: 0.39
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 21.00
EPT/C: 0.72
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 141
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 17/<1
Substrate: Cobbles....StreamBank Vegetation/Stability: Trees/Unstable
Canopy: Mostly Open....Other: Urban; Water temp.19.9 /pH 7.7 /DO 5.2 /Cond.389

Station: AN0100
Moores Ck, Barry Rd , W Amwell Twp, Hunterdon County
Lambertville USGS Quadrangle
Date Sampled: 07/08/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	42
Chironomidae	6	26
Baetidae	4	10
Empididae	6	7
Tipulidae	3	6
Hydroptilidae	4	3
Elmidae	4	3
Perlidae	1	2
Psephenidae	4	2
Philopotamidae	3	1
Planariidae	4	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 104
% Contribution of Dominant Family: 40.38 % (Hydropsychidae)
Family Biotic Index: 4.55
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 55.77
EPT/C: 2.14
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 144

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 30/<1
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Trees/Unstable
Canopy: Mostly Open....Other: Forested/Rural/Agricultural cropland and livestock; Water temp.18.0 /pH 7.2 /DO 5.6 /Cond.221

Station: AN0101
Moores Ck, Rt 29, Hopewell Twp, Mercer County
Lambertville USGS Quadrangle
Date Sampled: 07/08/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	34
Chironomidae	6	27
Baetidae	4	22
Hydroptilidae	4	4
Empididae	6	3
Gammaridae	4	2
Nematoda	6	2
Glossosomatidae	0	1
Tipulidae	3	1
Elmidae	4	1
Psephenidae	4	1
Lymnaeidae	6	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 34.00 % (Hydropsychidae)
Family Biotic Index: 4.61
Scraper/Filterer Collector Ratio: 0.24
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 62.00
EPT/C: 2.30
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 166

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 50/<1
Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Trees,shrubs,weeds/Unstable
Canopy: Open....Other: Forested/Rural; Water temp.18.9 /pH 7.6 /DO 6.1 /Cond.364

Station: AN0102
Jacobs Ck, Woosamonsa Rd , Hopewell Twp, Mercer County
Pennington USGS Quadrangle
Date Sampled: 07/07/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Psephenidae	4	21
Hydropsychidae	4	16
Chironomidae	6	13
Elmidae	4	11
Tipulidae	3	10
Leptophlebiidae	2	7
Perlidae	1	3
Hydrophilidae	5	3
Empididae	6	2
Baetidae	4	2
BloodRed Chironomidae	8	2
Heptageniidae	4	2
Ptilodactylidae	1	1
Astacidae	7	1
Philopotamidae	3	1
Planorbidae	6	1
Dryopidae	5	1
Hydroptilidae	4	1
Gomphidae	1	1
Veliidae	9	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 21.00 % (Psephenidae)
Family Biotic Index: 4.12
Scraper/Filterer Collector Ratio: 1.30
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 32.00
EPT/C: 2.13
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 170

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 15/<1
Substrate: Cobbles,gravel,silt....StreamBank Vegetation/Stability: Trees,weeds/Stable
Canopy: Mostly Open....Other: Forested/Rural/Agricultural cropland and livestock; Water temp.17.0 /pH 7.4 /DO 8.1 /Cond.210

Station: AN0103
Ewing Ck {Airport Br}, Rt 579 , Hopewell Twp, Mercer County
Pennington USGS Quadrangle
Date Sampled: 07/02/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	30
Psephenidae	4	12
Elmidae	4	12
Chironomidae	6	11
Asellidae	8	9
Baetidae	4	8
Tipulidae	3	5
Hydroptilidae	4	2
Heptageniidae	4	2
Tubificidae	10	1
Hydrophilidae	5	1
Astacidae	7	1
Philopotamidae	3	1
Planariidae	4	1
Perlidae	1	1
Polycentropodidae	6	1
Naididae	7	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 18

Total Number of Individuals: 100

% Contribution of Dominant Family: 30.00 % (Hydropsychidae)

Family Biotic Index: 4.68

Scraper/Filterer Collector Ratio: 0.85

Shredder/Total Ratio: 0.09

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7

% EPT: 45.00

EPT/C: 4.09

NJIS Rating: 30

Biological Condition: Nonimpaired

Habitat Analysis: 166

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 17/<1

Substrate: Cobbles,silt,snags....StreamBank Vegetation/Stability: Trees/Unstable

Canopy: Mostly Closed....Other: Forested/Suburban; Water temp.18.1 /pH 7.5 /DO 8.7 /Cond.499

Station: AN0104
Woolseys Bk, Rt 546 , Hopewell Twp, Mercer County
Pennington USGS Quadrangle
Date Sampled: 07/02/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	30
Asellidae	8	19
Fredericellidae	2	8
Paludicellidae	7	8
Chironomidae	6	7
Elmidae	4	7
Leptoceridae	4	4
Planariidae	4	3
BloodRed Chironomidae	8	3
Psephenidae	4	3
Tubificidae	10	2
Hydropsychidae	4	1
Veliidae	9	1
Corixidae	9	1
Naididae	7	1
Sphaeriidae	8	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 30.00 % (Gammaridae)
Family Biotic Index: 5.39
Scraper/Filterer Collector Ratio: 1.22
Shredder/Total Ratio: 0.19
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 6.00
EPT/C: 0.60
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 162
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 20/<1
Substrate: Cobbles,silt,snags....StreamBank Vegetation/Stability: Trees,weeds/Unstable
Canopy: Mostly Open....Other: Rural/Agricultural; Water temp.18.7 /pH 7.4 /DO 8.2 /Cond.358

Station: AN0105
Jacobs Ck, Rt 546 , Hopewell Twp, Mercer County
Pennington USGS Quadrangle
Date Sampled: 07/07/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	47
Chironomidae	6	21
Elmidae	4	5
Gammaridae	4	4
Psephenidae	4	4
Leptoceridae	4	3
Tetrastemmatidae	7	2
Heptageniidae	4	2
BloodRed Chironomidae	8	2
Tipulidae	3	1
Protoneuridae	9	1
Staphylinidae	4	1
Empididae	6	1
Hygrobatidae	2	1
Lumbricidae	10	1
Veliidae	9	1
Leptophlebiidae	2	1
Physidae	7	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 19

Total Number of Individuals: 100

% Contribution of Dominant Family: 47.00 % (Hydropsychidae)

Family Biotic Index: 4.72

Scraper/Filterer Collector Ratio: 0.16

Shredder/Total Ratio: 0.00

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4

% EPT: 53.00

EPT/C: 2.30

NJIS Rating: 24

Biological Condition: Nonimpaired

Habitat Analysis: 166

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 40/<1

Substrate: Cobbles,gravel,silt....StreamBank Vegetation/Stability: Trees/Unstable

Canopy: Mostly Open....Other: Forested/Rural; Water temp.17.2 /pH 7.7 /DO 6.5 /Cond.316

Station: AN0106
Jacobs Ck, Rt 29 , Hopewell Twp, Mercer County
Pennington USGS Quadrangle
Date Sampled: 07/01/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	56
Chironomidae	6	24
Baetidae	4	5
Gammaridae	4	4
Naididae	7	3
Philopotamidae	3	2
Lepidostomatidae	1	2
Asellidae	8	1
Heptageniidae	4	1
Tetrastemmatidae	7	1
Simulidae	6	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 100
% Contribution of Dominant Family: 56.00 % (Hydropsychidae)
Family Biotic Index: 4.58
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 66.00
EPT/C: 2.75
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 140

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/<1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Unstable
Canopy: Mostly Open....Other: Suburban; Water temp.19.0 /pH 8.5 /DO 10.3 /Cond.351

Station: AN0107
Gold Run, Rt 29 And Lower Ferry Rd , Wilburtha, Mercer County
Pennington/Trenton W USGS Quadrangle
Date Sampled: 07/01/97

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	22
Chironomidae	6	19
Asellidae	8	12
Hydropsychidae	4	12
Planariidae	4	11
Philopotamidae	3	8
Baetidae	4	6
Simuliidae	6	3
Psephenidae	4	2
Elmidae	4	2
Empididae	6	1
Hydroptilidae	4	1
Hygrobatidae	2	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 22.00 % (Gammaridae)
Family Biotic Index: 4.84
Scraper/Filterer Collector Ratio: 0.22
Shredder/Total Ratio: 0.12
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 27.00
EPT/C: 1.42
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 145

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/<1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Open....Other: Urban/Impoundment upstream/Construction upstream; Water temp.19.3 /pH 8.0 /DO 9.3 /Cond.229

Station: AN0108
Assumpink Ck, Roosevelt Rd, Roosevelt, Monmouth County
Roosevelt USGS Quadrangle
Date Sampled: 03/04/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	61
Sphaeriidae	8	15
Chironomidae	6	13
Tubificidae	10	2
BloodRed Chironomidae	8	2
Cypridae	6	1
Lumbriculidae	8	1
Elmidae	4	1
Hydrophilidae	5	1
Phryganeidae	4	1
Limnephilidae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 61.00 % (Simuliidae)
Family Biotic Index: 6.35
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.00
EPT/C: 0.13
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 158
Deficiency(s) noted: Simuliidae Family Overwhelmingly Dominant
Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/2
Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Trees,shrubs/Unstable
Canopy: Mostly Closed....Other: Forested/Suburban; Water temp.8.8 /pH 7.0 /DO 10.0/Cond.66

Station: AN0109
Assunpink Ck, Rt 535 , Edinburg, Mercer County
Hightstown USGS Quadrangle
Date Sampled: 03/04/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	92
Hydropsychidae	4	2
Chironomidae	6	2
Elmidae	4	2
Leptoceridae	4	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 6
Total Number of Individuals: 100
% Contribution of Dominant Family: 92.00 % (Simuliidae)
Family Biotic Index: 5.88
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3

% EPT: 4.00
EPT/C: 2.00
NJIS Rating: 9

Biological Condition: Moderately Impaired
Habitat Analysis: 167

Deficiency(s) noted: Simuliidae Family Overwhelmingly Dominant
Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 30/1
Substrate: Cobbles,gravel,mud....StreamBank Vegetation/Stability: Trees,shrubs/Unstable
Canopy: Mostly Open....Other: Forested/Suburban; Water temp.8.4 /pH 7.0 /DO 9.3 /Cond.133

Station: AN0109A
Assunpink Ck, Windsor Rd , Carsons Mills, Mercer County
Allentown USGS Quadrangle
Date Sampled: 03/04/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	55
BloodRed Chironomidae	8	12
Gammaridae	4	9
Hydridae	5	7
Plagiostomidae	4	4
Asellidae	8	3
Cypridae	6	1
Hydrophilidae	5	1
Belostomatidae	9	1
Cambaridae	5	1
Sphaeriidae	8	1
Polycentropodidae	6	1
Astacidae	7	1
Simulidae	6	1
Phryganeidae	4	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 55.00 % (Chironomidae)
Family Biotic Index: 6.00
Scraper/Filterer Collector Ratio: 4.00
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.00
EPT/C: 0.03
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 155
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 35/3
Substrate: Cobbles,mud....StreamBank Vegetation/Stability: Trees,shrubs/Unstable
Canopy: Mostly Open....Other: Forested/Suburban; Water temp.8.5 /pH 6.5 /DO 10.3 /Cond.106

Station: AN0109B
New Sharon Br, Sharon Rd , Carsons Mills, Mercer County
Allentown USGS Quadrangle
Date Sampled: 03/04/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	27
Gammaridae	4	25
Asellidae	8	15
Limnephilidae	4	8
Plagiostomidae	4	4
Simulidae	6	3
Dytiscidae	5	3
Tubificidae	10	3
Sphaeriidae	8	3
Notonectidae	9	2
Sialidae	4	2
BloodRed Chironomidae	8	1
Haliplidae	5	1
Physidae	7	1
Tetrastemmatidae	7	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 16

Total Number of Individuals: 100

% Contribution of Dominant Family: 27.00 % (Chironomidae)

Family Biotic Index: 5.74

Scraper/Filterer Collector Ratio: 0.00

Shredder/Total Ratio: 0.25

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2

% EPT: 9.00

EPT/C: 0.32

NJIS Rating: 15

Biological Condition: Moderately Impaired

Habitat Analysis: 152

Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 35/3

Substrate: Cobbles,mud....StreamBank Vegetation/Stability: Trees,shrubs/Unstable

Canopy: Mostly Open....Other: Forested/Suburban; Water temp.9.4 /pH 6.5 /DO 9.8 /Cond.160

Station: AN0110
Shipetaukan Ck, Van Kirk Rd , Lawrence Twp, Mercer County
Princeton USGS Quadrangle
Date Sampled: 03/03/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	74
Chironomidae	6	10
Philopotamidae	3	3
Capniidae	1	2
Asellidae	8	2
Planariidae	4	2
Tipulidae	3	2
Dytiscidae	5	1
Nemouridae	2	1
Sialidae	4	1
Naididae	7	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 74.00 % (Simuliidae)
Family Biotic Index: 5.67
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 7.00
EPT/C: 0.70
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 147
Deficiency(s) noted: Simuliidae Family Overwhelmingly Dominant -
Paucity of Clean Water Organisms

Observations

Streamwater: Slightly turbid....Flow: Moderate....Width/Depth (ft): 5/1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Open....Other: Suburban/Agricultural cropland; Water temp.8.2 /pH 7.3 /DO 11.2 /Cond.231

Station: AN0111
Shipetaukan Ck, Rt 583 , Lawrence Twp, Mercer County
Princeton USGS Quadrangle
Date Sampled: 03/03/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	38
Chironomidae	6	29
Gammaridae	4	19
Viviparidae	6	4
Corixidae	9	4
Sphaeriidae	8	3
Asellidae	8	2
BloodRed Chironomidae	8	2
Plagiostomidae	4	2
Lumbriculidae	8	2
Tabanidae	6	2
Baetidae	4	1
Planorbidae	6	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 109
% Contribution of Dominant Family: 34.86 % (Tubificidae)
Family Biotic Index: 7.27
Scraper/Filterer Collector Ratio: 1.67
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.92
EPT/C: 0.03
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 128
Deficiency(s) noted: Significant Organic Pollution
Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 13/2
Substrate: Mud....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Open....Other: Forested/Rural; Water temp.8.6 /pH 7.3 /DO 11.1 /Cond.241

Station: AN0112
Little Shabakunk Ck, Rt 583 , Franklin Corner, Mercer County
Princeton USGS Quadrangle
Date Sampled: 03/03/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	23
BloodRed Chironomidae	8	22
Chironomidae	6	7
Heptageniidae	4	4
Elmidae	4	3
Planorbidae	6	2
Lymnaeidae	6	2
Hydrophilidae	5	1
Enchytraeidae	10	1
Hydrobiidae	8	1
Lumbriculidae	8	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 67
% Contribution of Dominant Family: 34.33 % (Tubificidae)
Family Biotic Index: 7.93
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 5.97
EPT/C: 0.21
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 127
Deficiency(s) noted: Significant Organic Pollution
Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 11/2
Substrate: Sand....StreamBank Vegetation/Stability: Trees, shrubs/Stable
Canopy: Mostly Open....Other: Suburban; Water temp. 9.1 /pH 7.5 /DO 10.6 /Cond. 189

Station: AN0113
Shabakunk Ck, Bull Run Rd , Ewing Twp, Mercer County
Pennington USGS Quadrangle
Date Sampled: 03/05/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	41
Tubificidae	10	19
Hydropsychidae	4	11
BloodRed Chironomidae	8	7
Naididae	7	6
Gammaridae	4	4
Planorbidae	6	2
Haliplidae	5	2
Physidae	7	2
Asellidae	8	1
Simulidae	6	1
Protoneuriidae	9	1
Lumbriculidae	8	1
Heptageniidae	4	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 41.00 % (Chironomidae)
Family Biotic Index: 6.69
Scraper/Filterer Collector Ratio: 0.92
Shredder/Total Ratio: 0.43
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 12.00
EPT/C: 0.25
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 132
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 30/1
Substrate: Cobbles,gravel,silt....StreamBank Vegetation/Stability: Trees/Unstable
Canopy: Mostly Open....Other: Suburban; Water temp.5.7 /pH 7.4 /DO 13.6 /Cond.298

Station: AN0114
Shabakunk Ck, Rt 206 , Lawrence Twp, Mercer County
Princeton USGS Quadrangle
Date Sampled: 03/03/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	30
Hydropsychidae	4	13
Elmidae	4	11
Spongillidae	5	9
Tubificidae	10	7
Corbiculidae	8	6
Gammaridae	4	5
Paludicellidae	7	5
BloodRed Chironomidae	8	4
Planorbidae	6	4
Lumbriculidae	8	3
Tetrastemmatidae	7	3
Tipulidae	3	3
Empididae	6	2
Calopterygidae	5	1
Planariidae	4	1
Lebertiidae	4	1
Lumbricidae	10	1
Nematoda	6	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 110
% Contribution of Dominant Family: 27.27 % (Chironomidae)
Family Biotic Index: 5.87
Scraper/Filterer Collector Ratio: 1.15
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 11.82
EPT/C: 0.35
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 121
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 20/2
Substrate: Gravel,sand....StreamBank Vegetation/Stability: Trees/Unstable
Canopy: Mostly Open....Other: Suburban; Water temp.8.7 /pH 7.7 /DO 11.6 /Cond. 215

Station: AN0115
Miry Run, Rt 533 , Hamilton Twp, Mercer County
Trenton E USGS Quadrangle
Date Sampled: 03/05/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	17
Sphaeriidae	8	17
Simulidae	6	14
Tubificidae	10	13
Chironomidae	6	11
Plagiostomidae	4	5
Lumbriculidae	8	4
Corixidae	9	3
Lymnaeidae	6	3
Hydropsychidae	4	2
Elmidae	4	2
Limnephilidae	4	2
Lumbricidae	10	2
Tetrastemmatidae	7	2
Glossiphoniidae	8	1
Planariidae	4	1
Macromiidae	3	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 17.00 % (Gammaridae & Sphaeriidae)
Family Biotic Index: 6.54
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 4.00
EPT/C: 0.36
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 92
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 20/1
Substrate: Gravel,sand,mud....StreamBank Vegetation/Stability: Trees/Unstable
Canopy: Mostly Open....Other: Urban/Channelized; Water temp.7.5 /pH 6.8 /DO 9.9 /Cond.141

Station: AN0115A
Miry Run, Pond Rd , Washington Twp, Mercer County
Trenton E USGS Quadrangle
Date Sampled: 03/05/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	41
Simulidae	6	11
Elmidae	4	11
Nemouridae	2	10
Hydropsychidae	4	9
Planariidae	4	3
Fredericellidae	2	3
Protoneuriidae	9	3
Aeshnidae	3	2
Physidae	7	2
Tubificidae	10	1
Ephemerellidae	1	1
Gammaridae	4	1
Ceratopogonidae	6	1
Hydrophilidae	5	1

Statistical Analysis

Number of Taxa:	15
Total Number of Individuals:	100
% Contribution of Dominant Family:	41.00 % (Chironomidae)
Family Biotic Index:	5.03
Scraper/Filterer Collector Ratio:	0.00
Shredder/Total Ratio:	0.51
E+P+T (Ephemeroptera, Plecoptera, Trichoptera):	3
% EPT:	20.00
EPT/C:	0.49
NJIS Rating:	18
Biological Condition:	Moderately Impaired
Habitat Analysis:	131
Observations	
Streamwater:	Slightly Turbid....Flow: Moderate....Width/Depth (ft): 13/2
Substrate:	Gravel,sand,mud....StreamBank Vegetation/Stability: Trees/Stable
Canopy:	Mostly Open....Other: Forested/Suburban; Water temp.6.6 /pH 7.3 /DO 10.7 /Cond.160

Station: AN0116
Assunpink Ck, Mulberry St , Trenton, Mercer County
Trenton E USGS Quadrangle
Date Sampled: 03/05/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	38
Gammaridae	4	15
Paludicellidae	7	12
Hydropsychidae	4	6
Tubificidae	10	6
Cypridae	6	5
Asellidae	8	3
Plagiostomidae	4	3
Physidae	7	3
Sphaeriidae	8	3
Protoneuridae	9	2
Planorbidae	6	1
Lumbriculidae	8	1
Simulidae	6	1
Valvatidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 38.00 % (Chironomidae)
Family Biotic Index: 6.09
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 6.00
EPT/C: 0.16
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 122
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 60/3
Substrate: Cobbles,gravel,mud....StreamBank Vegetation/Stability: Weeds/Unstable
Canopy: Open....Other: Urban/Industrial; Water temp.8.0 /pH 7.4 /DO 9.6 /Cond.217

Station: AN0117
Pond Run, Rt 533 , Hamilton Twp, Mercer County
Trenton E USGS Quadrangle
Date Sampled: 03/05/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	81
Sphaeriidae	8	9
Chironomidae	6	5
BloodRed Chironomidae	8	2
Cyclopidae	4	1
Cypridae	6	1
Enchytraeidae	10	1
Plagiostomidae	4	1
Limnephilidae	4	1
Naididae	7	1
Physidae	7	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 12

Total Number of Individuals: 105

% Contribution of Dominant Family: 77.14 % (Tubificidae)

Family Biotic Index: 9.30

Scraper/Filterer Collector Ratio: 0.00

Shredder/Total Ratio: 0.06

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1

% EPT: 0.95

EPT/C: 0.14

NJIS Rating: 6

Biological Condition: Severely Impaired

Habitat Analysis: 139

Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant - Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 9/2

Substrate: Gravel,mud....StreamBank Vegetation/Stability: Trees,shrubs/Unstable

Canopy: Mostly Closed....Other: Forested/Urban; Water temp.7.3 /pH 7.0 /DO 10.2 /Cond.174

Station: AN0118
Assunpink Ck, Willow St , Trenton, Mercer County
Trenton W USGS Quadrangle
Date Sampled: 03/05/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	88
Fredericellidae	2	5
Corixidae	9	1
Cypridae	6	1
Enchytraeidae	10	1
Chironomidae	6	1
Psychodidae	10	1
Sphaeriidae	8	1
Lymnaeidae	6	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 100
% Contribution of Dominant Family: 88.00 % (Gammaridae)
Family Biotic Index: 4.17
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 104
Deficiency(s) noted: Gammaridae Family Overwhelmingly Dominant
Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 55/5
Substrate: Cobbles,sand,mud....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Open....Other: Urban/Channelized; Water temp.7.9 /pH 7.1 /DO 11.6/Cond.225

Station: AN0294
Lake Lookout Bk, Wawayanda St Pk, Wawayanda, Sussex County
Wawayanda USGS Quadrangle
Date Sampled: 06/09/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	47
Hydropsychidae	4	18
Chironomidae	6	15
Baetidae	4	7
Tetrastemmatidae	7	3
Simulidae	6	3
Lumbricidae	10	2
Elmidae	4	2
Tipulidae	3	1
Planariidae	4	1
Brachycentridae	1	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 100
% Contribution of Dominant Family: 47.00 % (Gammaridae)
Family Biotic Index: 4.53
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 26.00
EPT/C: 1.73
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 164

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 11/1
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Open....Other: Forested; Water temp.15.7 /pH 7.4 /DO 7.9 /Cond.145

Station: AN0295
Wawayanda Bk, Canal Rd , Maple Grange, Sussex County
Wawayanda USGS Quadrangle
Date Sampled: 06/09/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	31
Gammaridae	4	22
Elmidae	4	16
Baetidae	4	11
Heptageniidae	4	4
BloodRed Chironomidae	8	3
Asellidae	8	2
Lumbriculidae	8	2
Tipulidae	3	1
Aeshnidae	3	1
Hydropsychidae	4	1
Corixidae	9	1
Gomphidae	1	1
Lumbricidae	10	1
Veliidae	9	1
Limnephilidae	4	1
Simulidae	6	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 31.00 % (Chironomidae)
Family Biotic Index: 5.03
Scraper/Filterer Collector Ratio: 1.55
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 17.00
EPT/C: 0.50
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 135

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 22/3
Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability:
Trees,shrubs,grasses/Unstable
Canopy: Mostly Closed....Other: Forested/Agricultural cropland; Water temp.13.7 /pH 7.6
/DO 9.3 /Cond.353

Station: AN0296
Black Ck, Marker Rd , Maple Grange, Sussex County
Wawayanda USGS Quadrangle
Date Sampled: 06/10/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	48
Corixidae	9	32
Physidae	7	12
Elmidae	4	2
Planariidae	4	2
Philopotamidae	3	1
Hydridae	5	1
Tubificidae	10	1
Chironomidae	6	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 100
% Contribution of Dominant Family: 48.00 % (Gammaridae)
Family Biotic Index: 6.04
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.00
EPT/C: 1.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 148
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 50/4
Substrate: Mud....StreamBank Vegetation/Stability: Grass,shrubs,trees/Unstable
Canopy: Open....Other: Rural; Water temp.15.6 /pH 7.0 /DO 7.8 /Cond.670

Station: AN0297
Wallkill River, Rt 15 , Sparta, Sussex County
Newton E USGS Quadrangle
Date Sampled: 06/16/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	30
Asellidae	8	27
Gammaridae	4	17
Planariidae	4	7
Fredericellidae	2	5
Elmidae	4	4
Baetidae	4	3
BloodRed Chironomidae	8	2
Tubificidae	10	2
Chironomidae	6	1
Psephenidae	4	1
Glossosomatidae	0	1
Naididae	7	1
Veliidae	9	1

Statistical Analysis

Number of Taxa: 14

Total Number of Individuals: 102

% Contribution of Dominant Family: 29.41 % (Hydropsychidae)

Family Biotic Index: 5.22

Scraper/Filterer Collector Ratio: 0.19

Shredder/Total Ratio: 0.28

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3

% EPT: 33.33

EPT/C: 11.11

NJIS Rating: 21

Biological Condition: Moderately Impaired

Habitat Analysis: 191

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 20/1

Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Trees/Stable

Canopy: Mostly Closed....Other: Forested/Suburban; Water temp.20.4 /pH 8.4 /DO 8.6 /Cond.558

Station: AN0298
Wallkill River, Kennedy Ave , Ogdensburg, Sussex County
Franklin USGS Quadrangle
Date Sampled: 06/11/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	40
Chironomidae	6	36
Hydropsychidae	4	10
Simulidae	6	5
Baetidae	4	4
Tipulidae	3	1
BloodRed Chironomidae	8	1
Hydroptilidae	4	1
Naididae	7	1
Nematoda	6	1

Statistical Analysis

Number of Taxa: 10

Total Number of Individuals: 100

% Contribution of Dominant Family: 40.00 % (Gammaridae)

Family Biotic Index: 4.90

Scraper/Filterer Collector Ratio: 0.00

Shredder/Total Ratio: 0.36

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3

% EPT: 15.00

EPT/C: 0.41

NJIS Rating: 18

Biological Condition: Moderately Impaired

Habitat Analysis: 142

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 13/2

Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Trees,shrubs,grass/Unstable

Canopy: Mostly Open....Other: Forested/Rural; Water temp.16.5 /pH 8.4 /DO 8.5 /Cond.608

Station: AN0299
Wallkill River, Scott Rd , Franklin, Sussex County
Hamburg USGS Quadrangle
Date Sampled: 06/11/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	62
Hydropsychidae	4	14
Chironomidae	6	9
Heptageniidae	4	4
BloodRed Chironomidae	8	3
Elmidae	4	2
Tubificidae	10	2
Tipulidae	3	1
Philopotamidae	3	1
Ephemereellidae	1	1
Simulidae	6	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 100
% Contribution of Dominant Family: 62.00 % (Gammaridae)
Family Biotic Index: 4.39
Scraper/Filterer Collector Ratio: 0.56
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 20.00
EPT/C: 1.67
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 174
Deficiency(s) noted: Gammaridae Family Overwhelmingly Dominant

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 23/2
Substrate: Cobbles....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Closed....Other: Forested/Rural/Golf course upstream; Water temp.18.4 /pH 7.8 /DO 8.2 /Cond.558

Station: AN0300
Wallkill River, Rt94 , Hamburg, Sussex County
Hamburg USGS Quadrangle
Date Sampled: 06/11/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	63
Chironomidae	6	16
Tubificidae	10	6
Simulidae	6	3
Psephenidae	4	2
Elmidae	4	2
BloodRed Chironomidae	8	2
Caenidae	7	1
Heptageniidae	4	1
Cambaridae	5	1
Limnephilidae	4	1
Ephemerellidae	1	1
Hydropsychidae	4	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 63.00 % (Gammaridae)
Family Biotic Index: 4.83
Scraper/Filterer Collector Ratio: 1.25
Shredder/Total Ratio: 0.17
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 5.00
EPT/C: 0.28
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 163
Deficiency(s) noted: Gammaridae Family Overwhelmingly Dominant
Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 27/2
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees,shrubs/Stable
Canopy: Mostly Closed....Other: Forested/Industrial/Regional STP & Ames Rubber upstream;
Water temp.18.0/pH 7.5 /DO 9.4 /Cond.558

Station: AN0301
Beaver Run, Cemetery Rd , Wantage Twp, Sussex County
Hamburg USGS Quadrangle
Date Sampled: 06/11/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	35
Hydropsychidae	4	28
Chironomidae	6	13
Simuliidae	6	11
Tipulidae	3	3
Baetidae	4	3
Elmidae	4	3
Asellidae	8	2
Brachycentridae	1	2

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 100
% Contribution of Dominant Family: 35.00 % (Gammaridae)
Family Biotic Index: 4.47
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.15
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 33.00
EPT/C: 2.54
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 141

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 7/1
Substrate: Cobbles,mud....StreamBank Vegetation/Stability: Shrubs,grasses/Stable
Canopy: Mostly Open....Other: Agricultural livestock; Water temp.16.7 /pH 7.7 /DO 9.5 /Cond.556

Station: AN0302
Wallkill River, Rt 565 , Sussex, Sussex County
Hamburg USGS Quadrangle
Date Sampled: 06/10/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	14
Baetidae	4	4
Gammaridae	4	3
Elmidae	4	2
Tubificidae	10	2
Notonectidae	9	2
Simulidae	6	2
Sphaeriidae	8	2
Corixidae	9	2
Brachycentridae	1	1
Cambaridae	5	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 36
% Contribution of Dominant Family: 38.89 % (Chironomidae)
Family Biotic Index: 5.94
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 16.67
EPT/C: 1.19
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 156

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 30/2
Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Grasses,trees/Unstable
Canopy: Open....Other: Rural/Agricultural/Ames Rubber Dischg upstream; Water temp.16.7 /pH 7.3 /DO 8.3 /Cond.582

Station: AN0303
Papakating Ck, Rt 619 & Gunn Rd , Frankford Twp, Sussex County
Branchville USGS Quadrangle
Date Sampled: 06/17/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	20
Chironomidae	6	20
Leuctridae	0	15
Elmidae	4	10
Perlodidae	2	9
Baetidae	4	9
Leptophlebiidae	2	3
Perlidae	1	2
Psephenidae	4	2
Odontoceridae	0	2
Tipulidae	3	1
Philopotamidae	3	1
Hydroptilidae	4	1
Lumbriculidae	8	1
Hydrophilidae	5	1
Simulidae	6	1
Sperchonidae	2	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 18

Total Number of Individuals: 100

% Contribution of Dominant Family: 20.00 % (Hydropsychidae & Chironomidae)

Family Biotic Index: 3.45

Scraper/Filterer Collector Ratio: 0.73

Shredder/Total Ratio: 0.15

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 10

% EPT: 63.00

EPT/C: 3.15

NJIS Rating: 30

Biological Condition: Nonimpaired

Habitat Analysis: 193

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 8/<1

Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Trees,shrubs/Stable

Canopy: Closed....Other: Forested/Rural/Agricultural cropland; Water temp.19.1 /pH 7.8 /DO 8.8 /Cond.185

Station: AN0304
Papakating Ck, Rt 565 , Pellettown, Sussex County
Branchville USGS Quadrangle
Date Sampled: 06/16/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	41
Gammaridae	4	38
Enchytraeidae	10	6
Baetidae	4	3
Physidae	7	3
Chironomidae	6	3
BloodRed Chironomidae	8	2
Elmidae	4	2
Hydropsychidae	4	2
Erpobdellidae	8	2
Asellidae	8	1
Sciomyzidae	10	1
Planorbidae	6	1
Talitridae	8	1
Lumbricidae	10	1
Corixidae	9	1

Statistical Analysis

Number of Taxa: 16

Total Number of Individuals: 108

% Contribution of Dominant Family: 37.96 % (Tubificidae)

Family Biotic Index: 7.15

Scraper/Filterer Collector Ratio: 0.50

Shredder/Total Ratio: 0.04

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2

% EPT: 4.63

EPT/C: 0.93

NJIS Rating: 12

Biological Condition: Moderately Impaired

Habitat Analysis: 122

Deficiency(s) noted: Significant Organic Pollution

Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 30/2

Substrate: Sand,mud....StreamBank Vegetation/Stability: Grasses/Stable

Canopy: Open....Other: Forested/Rural/Agricultural cropland; Water temp.17.6 /pH 9.4 /DO 9.2 /Cond.212

Station: AN0305
Papakating Ck W Br, Rt 519 , Plumbsock, Sussex County
Branchville USGS Quadrangle
Date Sampled: 06/16/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Baetidae	4	13
Asellidae	8	12
Chironomidae	6	11
Hydropsychidae	4	10
Sphaeriidae	8	10
Heptageniidae	4	9
Psephenidae	4	7
Elmidae	4	7
Leptophlebiidae	2	5
Lumbriculidae	8	3
Physidae	7	3
Perlidae	1	2
Philopotamidae	3	1
Tipulidae	3	1
Planariidae	4	1
Empididae	6	1
Psychomyiidae	2	1
Cambaridae	5	1
Ceratopogonidae	6	1
Veliidae	9	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 13.00 % (Baetidae)
Family Biotic Index: 5.21
Scraper/Filterer Collector Ratio: 1.14
Shredder/Total Ratio: 0.12
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 41.00
EPT/C: 3.73
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 184

Observations

Streamwater: Slightly Turbid....Flow: Fast....Width/Depth (ft): 15/2
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested/Rural/Agricultural livestock; Water temp.18.5 /pH 8.1 /DO 8.8 /Cond.148

Station: AN0306
Papakating Ck W Br, Rt 565 , Mccoys Corner, Sussex County
Branchville USGS Quadrangle
Date Sampled: 06/16/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	50
Baetidae	4	11
Tubificidae	10	10
Chironomidae	6	8
Physidae	7	4
Heptageniidae	4	3
BloodRed Chironomidae	8	3
Naididae	7	2
Tipulidae	3	1
Leuctridae	0	1
Lumbricidae	10	1
Cambaridae	5	1
Leptophlebiidae	2	1
Psephenidae	4	1
Limnephilidae	4	1
Lymnaeidae	6	1
Hydropsychidae	4	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 50.00 % (Gammaridae)
Family Biotic Index: 5.08
Scraper/Filterer Collector Ratio: 0.44
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 18.00
EPT/C: 1.64
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 190

Observations

Streamwater: Slightly Turbid....Flow: Fast....Width/Depth (ft): 25/3
Substrate: Cobbles,gravel,mud....StreamBank Vegetation/Stability: Trees,weeds/Stable
Canopy: Mostly Open....Other: Forested/Rural; Water temp.18.1 /pH 8.2 /DO 9.7 /Cond.158

Station: AN0307
Papakating Ck , Rt 565 , Mccoys Corner, Sussex County
Hamburg USGS Quadrangle
Date Sampled: 06/10/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	34
Chironomidae	6	20
Tubificidae	10	19
BloodRed Chironomidae	8	9
Elmidae	4	5
Baetidae	4	3
Cambaridae	5	3
Asellidae	8	2
Hydropsychidae	4	2
Planorbidae	6	2
Lumbriculidae	8	2
Planariidae	4	1
Leuctridae	0	1
Limnephilidae	4	1
Psephenidae	4	1
Veliidae	9	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 107
% Contribution of Dominant Family: 31.78 % (Gammaridae)
Family Biotic Index: 6.02
Scraper/Filterer Collector Ratio: 0.41
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 6.54
EPT/C: 0.23
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 90
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 30/3
Substrate: Cobbles,mud....StreamBank Vegetation/Stability: Grass,trees/Unstable
Canopy: Open....Other: Agricultural livestock/Channelized; Water temp.18.8 /pH 7.5 /DO 10.1 /Cond.340

Station: AN0308
Clove R Trib, Rose Marrow Ave , Wantage Twp, Sussex County
Unionville USGS Quadrangle
Date Sampled: 06/17/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Naididae	7	54
Baetidae	4	12
Chironomidae	6	7
BloodRed Chironomidae	8	5
Elmidae	4	4
Hydropsychidae	4	3
Lumbriculidae	8	3
Talitridae	8	2
Physidae	7	2
Ceratopogonidae	6	1
Enchytraeidae	10	1
Planorbidae	6	1
Tipulidae	3	1
Cambaridae	5	1
Hydrophilidae	5	1
Leptophlebiidae	2	1
Perlidae	1	1
Limnephilidae	4	1
Simulidae	6	1

Statistical Analysis

Number of Taxa: 19

Total Number of Individuals: 102

% Contribution of Dominant Family: 52.94 % (Naididae)

Family Biotic Index: 6.25

Scraper/Filterer Collector Ratio: 1.25

Shredder/Total Ratio: 0.02

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5

% EPT: 17.65

EPT/C: 1.47

NJIS Rating: 18

Biological Condition: Moderately Impaired

Habitat Analysis: 167

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 10/3

Substrate: Cobbles,gravel,sand....StreamBank Vegetation/Stability: Trees/Stable

Canopy: Mostly Closed....Other: Forested/Rural/Agricultural cropland; Water temp.18.3 /pH 8.7 /DO 8.3 /Cond.121

Station: AN0309
Clove R, Loomis Ave , Sussex, Sussex County
Hamburg USGS Quadrangle
Date Sampled: 06/10/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Lumbriculidae	8	52
Chironomidae	6	22
Elmidae	4	12
Baetidae	4	6
Hydropsychidae	4	5
Veliidae	9	2
BloodRed Chironomidae	8	1
Planariidae	4	1
Glossosomatidae	0	1
Psephenidae	4	1

Statistical Analysis

Number of Taxa: 10

Total Number of Individuals: 103

% Contribution of Dominant Family: 50.49 % (Lumbriculidae)

Family Biotic Index: 6.54

Scraper/Filterer Collector Ratio: 0.52

Shredder/Total Ratio: 0.00

E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3

% EPT: 11.65

EPT/C: 0.51

NJIS Rating: 15

Biological Condition: Moderately Impaired

Habitat Analysis: 113

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 30/1

Substrate: Cobbles,sand....StreamBank Vegetation/Stability: Shrubs,grass,trees/Stable

Canopy: Mostly Closed....Other: Urban; Water temp.19.8 /pH 7.8 /DO 9.9 /Cond.246

Station: AN0309A
Clove R, Unionville Rd, Wantage Twp, Sussex County
Port Jervis S USGS Quadrangle
Date Sampled: 06/17/98

Family	Family Tolerance Value (FTV)	Number of Individuals
Baetidae	4	14
Chironomidae	6	14
Heptageniidae	4	10
Ephemerellidae	1	9
Hydropsychidae	4	8
Lumbriculidae	8	7
Psephenidae	4	7
Philopotamidae	3	5
Leuctridae	0	5
Leptophlebiidae	2	4
Lumbricidae	10	3
Sphaeriidae	8	3
Glossosomatidae	0	2
Caenidae	7	1
Astacidae	7	1
Tipulidae	3	1
Perlodidae	2	1
Perlidae	1	1
Tetrastemmatidae	7	1
Rhyacophilidae	0	1
Simulidae	6	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 100
% Contribution of Dominant Family: 14.00 % (Baetidae & Chironomidae)
Family Biotic Index: 4.19
Scraper/Filterer Collector Ratio: 0.94
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 61.00
EPT/C: 4.36
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 196

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 25/3
Substrate: Cobbles,gravel....StreamBank Vegetation/Stability: Trees/Stable
Canopy: Mostly Closed....Other: Forested/Rural; Water temp.17.7 /pH 8.2 /DO 9.8 /Cond.100